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This report is a part of the 1982 Needs Survey and is a supplement to the cost estimate report to Congress dated Decmeber 31, 1982. It provides detailed summaries of the technical data collected during the Survey for wastewater treatment and collection (Categories I through IV), combined sewer overflow abatement (Category V), and treatment and/or collection of stormwater (Category VI). A description of the 1982 Needs Survey methodolgy is presented in Appendix A for Categories I through IV and Appendix B for Categories V and VI.

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Conveyance, Treatment, and Control of Municipal Wastewater, Combined Sewer Overflows, and Stormwater Runoff

Summaries of Technical Data

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THE 1982 NEEDS SURVEY

CONVEYANCE, TREATMENT, AND CONTROL OF MUNICIPAL WASTEWATER, COMBINED SEWER OVERFLOWS, AND STORMWATER RUNOFF

SUMMARIES OF TECHNICAL DATA

May 1983

Prepared for

U.S. Environmental Protection Agency
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CHAPTER I

DESCRIPTION OF THE 1982 NEEDS SURVEY

This chapter includes a background discussion of the 1982 Needs Survey, a description of the Survey categories, and general information concerning presentation of the data.

INTRODUCTION

The Needs Survey consists of a biennial survey of all wastewater conveyance and treatment, stormwater collection and treatment, and combined sewer overflow abatement needs for the entire country. The needs are obtained from a national survey of each of the more than 33,000 existing and planned publicly owned wastewater treatment works. Each need is reported as a cost estimate in dollars for providing or satisfying the stated need.

This report is a part of the 1982 Needs Survey and is a supplement to the cost estimate report to Congress dated December 31, 1982. It provides detailed summaries of the technical data collected during the Survey for wastewater treatment and collection (Categories I through IV), combined sewer overflow abatement (Category V), and treatment and/or collection of stormwater (Category VI). A description of the 1982 Needs Survey methodology is presented in Appendix A for Categories I through IV and Appendix B for Categories V and VI.

The Needs Survey was performed in compliance with the provisions of Sections 205(a) and 516(b)(2) of the Clean Water Act of 1972 (PL 92-500) and subsequent amendments thereto. The Environmental Protection Agency (EPA) submitted the 1982 Needs Survey cost estimates for municipal wastewater, combined sewer overflow, and stormwater collection and treatment needs to Congress on December 31, 1982.

The 1982 Needs Survey is the sixth such Survey performed by EPA. After the first two Surveys had been completed, a need became apparent to tabulate the great amount of technical data accumulated. Responding to this need, reports similar to this one summarizing the technical data acquired during the Surveys were published for the 1976, 1978, and 1980 Surveys.

Historically, costs of facilities have been the primary focus for these Surveys because they have been used by Congress to establish relative allocations of construction grant funds among the States. Besides the cost data, large amounts of technical data are accumulated during each Survey. These technical data are used in many of the cost breakdowns described in this report and have been found to be very useful to many levels of government and quasi-government agencies and to industrial organizations. EPA receives a large number of requests for data summaries annually from these sources. The major purpose of this report is to provide information commonly requested by the public. Further, this report provides valuable information for the management and operation of the EPA Construction Grants Program. These data are also very useful in the facilities planning process which now must be carried out by State and local governments.

The data collection process for the 1982 Needs Survey is described in Appendix A for Categories I through IV and Appendix B for Categories V and VI. The 1982 Needs Survey was conducted on a facility-by-facility basis for Categories I through IV, on an area-by-area basis and facility-by-facility basis for Category V, and on an area-by-area basis for Category VI.

Appendix C presents a copy of the EPA-1 form (Figures C.1 and C.2) used to collect information for Categories I through IV of more than 33,000 existing and planned facilities in the United States. Appendix D presents a copy of the combined sewer overflow worksheet (Figure D.1) used to collect information for Category V for the 1,100 combined sewer areas in the country. Appendices C and D also present an explanation of all items and codes associated with both forms.

In an attempt to make the Needs Survey data base better or more useful to the user community, comments, discussion, or suggestions for improvements are welcomed.

DESCRIPTION OF CATEGORIES REPORTED

The categories reported in the 1982 Survey are defined as follows:

Category I - Secondary Treatment

This category includes costs for facilities to achieve secondary levels of treatment, regardless of the treatment levels required at the facility site. Incremental costs for treatment levels above secondary are reported in Categories IIA and IIB. Costs for systems designed to serve individual residences are included in Category I. Costs of outfall sewers are also included in Category I. For purposes of the Survey, "best practicable wastewater treatment technology" (BPWTT) and secondary treatment were considered synonymous. Secondary treatment is defined as five day biochemical oxygen demand and suspended solids effluent concentrations of 25 mg/l or greater but not exceeding 30 mg/l, but not less than 85 percent removal of standard pollutants.

Category IIA - Advanced Secondary Treatment (AST)

Reported in this category are incremental costs above secondary treatment levels to achieve advanced secondary levels of treatment for those facilities that must achieve such levels. This requirement generally exists where water quality standards require removal of standard pollutants at levels greater than secondary. Standard pollutants are defined as five day biochemical oxygen demand and suspended solids. These are abbreviated as BOD_5 and Solids in the tables. AST would require standard pollutant removal greater than 85 percent, or effluent limits more stringent than 25 mg/l BOD_5 and 25 mg/l Solids but less than 95 percent, or effluent limits less stringent than 9 mg/l BOD_5 and 9 mg/l Solids. Effluent limitations between 25/25 and 30/30 mg/l BOD_5/Solids that include additional limiting parameters for phosphorus and ammonia (and do not require the removal of total nitrogen) are classified as Category IIA.

Category IIB - Advanced Treatment (AT)

Incremental costs above AST are reported for those facilities which require advanced levels of treatment. This requirement generally exists where water quality standards require removal of such pollutants as phosphorus, ammonia, nitrates, organic materials, and other substances. In addition, this requirement exists where removal for standard pollutants exceeds 95 percent or where effluent limits are equal to or less than 9 mg/l BOD_5 and 9 mg/l Solids, or where there are additional limiting parameters for ammonia and nitrogen that require the installation of denitrification, ammonia stripping, or ion exchange facilities. The terms advanced wastewater treatment, AT, AWT, and tertiary treatment are considered synonymous and are used interchangeably throughout this report.

Category IIIA - Correction of Infiltration/Inflow

Included in this category are costs for correction of sewer system infiltration/inflow (I/I) problems. Costs for a preliminary sewer system analysis and for a detailed Sewer System Evaluation Survey (SSES) would also be reported in this category.

Category IIIB - Major Rehabilitation of Sewers

Requirements for replacement and/or major rehabilitation of existing sewer systems are reported in this category. Costs are reported if the corrective actions are necessary to insure the integrity of the system. Major rehabilitation is considered to be extensive repair of existing sewers beyond the scope of normal maintenance programs; for example, where sewers are collapsing or structurally unsound.

Category IVA - New Collector Sewers

This category includes grant eligible costs for construction of new collector sewer systems and appurtenances designed to correct violations caused by raw discharges, pollution from septic tanks, and/or to comply with Federal, State, or local actions.

Category IVB - New Interceptor Sewers

Included in this category are new interceptor sewers and transmission pumping stations necessary for the bulk transport of wastewater.

Category V - Control of Combined Sewer Overflow (CSO)

This category includes projects designed to prevent and/or control periodic bypassing of untreated wastes from combined sewer systems. Combined sewers are designed to convey both sewage and stormwater.

Category VI - Treatment and/or Control of Stormwater

This category includes projects designed to abate pollution in urbanized areas from stormwater runoff channeled through sewers and other conveyances used only for such runoff. Stormwater channeled through combined sewers which also carry sewage is not included in Category VI.

Cost estimates for Categories I through VI are presented in "1982 Needs Survey - Cost Estimates for Construction of Publicly-Owned Wastewater Treatment Facilities," (430-9-82-009).

The 1982 Survey used the same cost estimate categories as were used in 1980. In 1980, the definitions of treatment Categories I and II were changed to more accurately reflect the incremental cost of advanced secondary treatment (AST) and advanced wastewater treatment (AWT) projects relative to secondary treatment costs. This change split Category II costs only and did not affect the total needs. This convention has been used in both the 1980 and 1982 Surveys.

FACILITIES REPORTED

The 1982 Needs Survey contains the most complete inventory of publicly owned wastewater treatment facilities. The 1982 Survey continued towards the 100 percent inventory goal set during previous Surveys. While the 1980 Survey came very close to achieving the 100 percent inventory, over 300 facilities, mostly small rural facilities, were identified for the first time during the 1982 Survey.

PRESENT AND FUTURE NEEDS

Two time periods pervade Needs Survey reporting. These are the present, meaning January 1, 1982, and the future, which means the year 2000. When dollars are used in this report, they represent January 1982 dollars. This is true for both present and future needs.

METRIC MEASURE

All units shown in the technical summaries are in metric units. Where space permits, English units are shown in parentheses. The following are the most common metric units used in this report, along with the factors used to convert to English units.

Multiply	By	To Obtain
Centimeters	0.3937	Inches
Hectares	2.4710	Acres
Kilometers	3,281	Feet
Liters/Capita/Day	0.2642	Gallons/Capita/Day
Meters	3.281	Feet
Metric Tons	0.9072	Short Tons
Thousand Cubic Meters per Day	0.2642	Million Gallons per Day

PRESENTATION OF DATA

For ease in interpreting the tables in this report, a discussion of each table is presented immediately adjacent to the table. The tables summarize various items from the data collection forms. For more detailed information the reader is referred to Appendices C and D where explanations are given for all items on the data collection forms.

The tables are arranged in the following general sequence:

Chapter II - Categories I, IIA, IIB

- All Levels of Treatment
- Raw Discharge
- Less Than Secondary Treatment
- Secondary Treatment
- Advanced Secondary Treatment
- Advanced Wastewater Treatment

Chapter III - Categories IIIA, IIIB, IVA, IVB

- Lengths and Sizes of New Pipe Needed
- New Pump Stations Needed
- Improvements to Existing Sewers

Chapter IV - Categories V and VI

- Combined Sewer Overflow Control
- Stormwater Runoff Control

Please refer to the Table of Contents for a listing of all tables.

CHAPTER II

SUMMARIES OF TREATMENT FACILITIES TECHNICAL DATA (CATEGORIES I, IIA, IIB)

Technical data on the municipal sewage treatment facilities in the nation were compiled in the course of the 1982 Needs Survey. The data were collected using the EPA-1 form which is described in detail in Appendix C.

The technical data for each treatment facility were collected at the same time as the dollar needs. The data were obtained from several sources including the 1980 Needs Survey files, NPDES permit files, EPA construction grant files, and various engineering plans and reports. A further description of the sources and methods used in collecting data for the 1982 Needs Survey is presented in Appendix A.

The technical data collected for all treatment facilities have been compiled and are presented in the 48 tables which follow. These technical tables include a discussion of each table presented immediately before the table.

TABLE 1

NUMBER OF EXISTING FACILITIES BY NATURE OF FACILITY

Table 1 is a summary by State of the facilities in operation in 1982. Excluded are facilities proposed to be built between 1982 and 2000 and new facilities under construction in 1982. Facilities in operation in 1982, but planned to be abandoned prior to 2000, are included in this summary.

The nature of a facility is recorded using a numerical code. The various codes are defined as follows:

Code 1: A complete wastewater treatment system consisting of a treatment plant, associated collector and/or interceptor sewers, and methods for disposal of effluent and sludge. All components are under the control of a single treatment authority. The collection system associated with a Code 1 facility is composed of combined sewers.

Code 2: A complete wastewater treatment system having all the components listed under Code 1. The collection system associated with a Code 2 facility is composed of separate sanitary sewers.

Code 3: A separate treatment plant. The collection systems which discharge to a Code 3 facility are under the control of one or more authorities.

Code 4: A municipal wastewater collection system composed of separate sanitary sewers. This system would consist of collector sewers and/or interceptor sewers, force mains, and pumping stations which either discharge without treatment or discharge to a facility controlled by a different authority. Code 4 systems handle only sanitary wastewaters.

Code 5: A municipal wastewater collection system composed of combined sewers. This system would consist of collector sewers and/or interceptor sewers, force mains, and pumping stations which either discharge without treatment or discharge to a facility controlled by a different authority. Code 5 systems handle sanitary wastewaters and stormwaters.

Code 6: Other types of systems; for example, operator training facilities.

Code 7: A system for the bulk transmission of wastewater with or without pumping stations and with or without interceptor sewers.

Code 8: A facility which provides handling, treatment, and disposal of sludge generated by other facilities. Included are vehicles and vehicle fleets used to transport sludge.

Code 9: This code refers to communities where the primary method of wastewater disposal is by means of individual onsite systems, usually septic tank systems.

Code 0: A community septic tank system including an appurtenant collection system.

Code D: A separate intermediate treatment facility which provides partial treatment only and discharges to another wastewater treatment facility where additional treatment is provided.

As used in this report, combined sewers are defined as sewers which carry both storm and sanitary wastewaters. Separate sewers carry only sanitary wastes. Storm sewers convey only storm runoff.

DECEMBER 31, 1982
TABLE 1

1982 NEEDS SURVEY

NUMBER OF EXISTING FACILITIES BY NATURE OF FACILITY

STATE	TOTAL	(CODE 1)	(CODE 2)	(CODE 3)	(CODE 4)	(CODE 5)	(CODE 6)	(CODE 7)	(CODE 8)	(CODE 9)	(CODE 0)	(CODE D)
ALABAMA	511	0	224	13	40	0	1	0	0	232	0	1
ALASKA	237	2	44	0	14	0	2	0	0	173	2	0
ARIZONA	389	0	110	3	19	0	0	0	0	257	0	0
ARKANSAS	762	0	285	0	22	0	0	0	0	455	0	0
CALIFORNIA	1,635	3	556	25	191	0	12	6	1	832	5	4
COLORADO	367	4	276	2	50	0	2	0	0	31	0	2
CONNECTICUT	219	14	86	1	29	1	2	0	0	85	1	0
DELAWARE	46	4	17	0	12	1	1	0	1	10	0	0
DIST. OF COLUM	1	1	0	0	0	0	0	0	0	0	0	0
FLORIDA	492	1	242	3	67	0	2	0	0	177	0	0
GEORGIA	792	8	374	5	99	0	1	0	0	304	0	1
HAWAII	53	0	33	0	1	0	0	0	0	19	0	0
IDAHO	247	12	126	1	13	0	0	0	0	96	1	0
ILLINOIS	1,459	61	647	32	245	29	5	0	0	448	0	0
INDIANA	780	120	229	3	35	6	2	0	0	303	1	1
IOWA	1,084	17	661	0	23	0	0	0	0	299	1	1
KANSAS	694	3	357	0	0	0	0	0	0	[illegible]	0	0
KENTUCKY	473	15	205	1	47	2	0	0	0	282	1	0
LOUISIANA	556	0	307	0	21	0	4	0	1	223	0	0
MAINE	270	33	36	7	43	27	5	0	0	99	0	0
MARYLAND	440	9	132	7	37	2	4	0	0	249	0	0
MASSACHUSETTS	277	24	77	0	77	11	4	0	0	75	1	0
MICHIGAN	1,069	65	294	11	215	29	3	10	0	448	2	0
MINNESOTA	922	13	480	17	133	5	0	0	0	274	0	0
MISSISSIPPI	664	0	323	1	15	0	0	0	0	525	0	0
MISSOURI	1,003	13	335	1	37	0	1	0	0	416	1	1
MONTANA	202	16	140	0	3	0	0	0	0	42	1	0
NEBRASKA	617	3	449	0	64	0	0	0	0	101	0	0
NEVADA	93	0	46	2	5	0	0	0	0	39	0	1
NEW HAMPSHIRE	104	17	45	2	23	3	2	0	0	88	2	0
NEW JERSEY	601	15	193	20	287	13	9	0	0	174	0	0
NEW MEXICO	214	0	103	0	0	0	1	0	0	101	0	1
NEW YORK	2,390	57	366	30	333	20	29	2	0	1,247	2	0
NORTH CAROLINA	857	1	502	13	69	0	1	0	0	271	0	0
NORTH DAKOTA	375	8	271	0	0	0	0	0	0	96	0	0
OHIO	1,213	110	580	4	251	0	2	0	1	355	2	0
OKLAHOMA	759	0	484	1	13	0	1	0	0	260	0	0
OREGON	299	9	193	4	34	1	0	0	0	30	0	0
PENNSYLVANIA	2,386	77	526	35	309	31	3	3	0	1,121	1	0
RHODE ISLAND	40	1	18	1	10	1	0	0	0	9	0	0
SOUTH CAROLINA	446	0	234	6	71	0	3	1	0	131	0	0
SOUTH DAKOTA	348	10	253	0	2	0	0	0	0	83	0	0
TENNESSEE	370	4	229	1	20	0	2	0	0	114	0	0
TEXAS	2,639	1	1,313	37	282	0	0	2	2	1,001	1	0
UTAH	281	1	90	1	58	0	0	0	0	131	0	0
VERMONT	118	39	53	0	2	1	0	0	0	30	2	0
VIRGINIA	790	0	213	15	88	3	6	2	0	424	1	0
WASHINGTON	463	30	206	6	60	6	0	0	0	151	2	2
WEST VIRGINIA	635	49	106	2	46	7	0	0	0	484	0	0
WISCONSIN	996	19	351	11	125	2	1	0	0	304	0	0
WYOMING	140	1	100	0	5	0	1	0	0	24	0	0
AMERICAN SAMOA	2	0	2	0	0	0	0	0	0	0	0	0
GUAM	7	0	7	0	0	0	0	0	0	0	0	0
N. MARIANAS	5	0	2	0	0	0	0	0	0	3	0	0
PUERTO RICO	34	1	31	0	1	0	0	0	0	1	0	0
PAC. TR. TERR.	30	0	6	0	0	0	0	0	0	24	0	0
VIRGIN ISLANDS	5	0	5	0	0	0	0	0	0	0	0	0
U.S. TOTALS	32,511	874	14,193	334	3,733	211	112	26	6	12,977	30	15

TABLE 2

NUMBER OF FACILITIES IN THE YEAR 2000 BY NATURE OF FACILITY

Table 2 lists the total number of facilities by State required to satisfy discharge requirements in the year 2000. Included are facilities that are operational in 1982 and will remain in operation through the year 2000, those facilities under construction in 1982, and those facilities proposed to be built before 2000. Excluded are facilities that are operational in 1982 but are projected to be abandoned prior to the year 2000.

The nature of a facility is recorded using a numerical code. The various codes are defined as follows:

Code 1: A complete wastewater treatment system consisting of a treatment plant, associated collector and/or interceptor sewers, and methods for disposal of effluent and sludge. All components are under the control of a single treatment authority. The collection system associated with a Code 1 facility is composed of combined sewers.

Code 2: A complete wastewater treatment system having all the components listed under Code 1. The collection system associated with a Code 2 facility is composed of separate sanitary sewers.

Code 3: A separate treatment plant. The collection systems which discharge to a Code 3 facility are under the control of one or more authorities.

Code 4: A municipal wastewater collection system composed of separate sanitary sewers. This system would consist of collector sewers and/or interceptor sewers, force mains, and pumping stations which either discharge without treatment or discharge to a facility controlled by a different authority. Code 4 systems handle only sanitary wastewaters.

Code 5: A municipal wastewater collection system composed of combined sewers. This system would consist of collector sewers and/or interceptor sewers, force mains, and pumping stations which either discharge without treatment or discharge to a facility controlled by a different authority. Code 5 systems handle sanitary wastewaters and stormwaters.

Code 6: Other types of systems; for example, operator training facilities.

Code 7: A system for the bulk transmission of wastewater with or without pumping stations and with or without interceptor sewers.

Code 8: A facility which provides handling, treatment, and disposal of sludge generated by other facilities. Included are vehicles and vehicle fleets used to transport sludge.

Code 9: This code refers to communities where the primary method of wastewater disposal is by means of individual onsite systems, usually septic tank systems.

Code 0: A community septic tank system including an appurtenant collection system.

Code D: A separate intermediate treatment facility which provides partial treatment only and discharges to another wastewater treatment facility where additional treatment is provided.

As used in this report, combined sewers are defined as sewers which carry both storm and sanitary wastewaters. Separate sewers carry only sanitary wastes. Storm sewers convey only storm runoff.

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TABLE 2

1982 NEEDS SURVEY

NUMBER OF FACILITIES IN THE YEAR 2000 BY NATURE OF FACILITY

STATE	TOTAL	(CODE 1)	(CODE 2)	(CODE 3)	(CODE 4)	(CODE 5)	(CODE 6)	(CODE 7)	(CODE 8)	(CODE 9)	(CODE 0)	(CODE B)
ALABAMA	527	0	327	15	95	0	1	0	0	88	0	1
ALASKA	238	2	121	0	0	0	2	0	0	110	3	0
ARIZONA	391	0	165	5	30	0	1	0	0	190	0	0
ARKANSAS	756	0	483	1	52	0	0	0	0	220	0	0
CALIFORNIA	1,659	3	882	26	279	0	26	11	1	420	6	5
COLORADO	368	2	286	3	61	0	0	0	0	14	0	2
CONNECTICUT	216	10	78	2	57	1	0	0	0	53	13	2
DELAWARE	46	4	17	0	19	1	1	0	1	2	1	0
DIST. OF COLUM	1	1	0	0	0	0	0	0	0	0	0	0
FLORIDA	493	1	312	6	160	0	1	0	0	11	0	2
GEORGIA	795	8	487	13	181	0	0	0	0	105	0	1
HAWAII	55	0	44	0	11	0	0	0	0	0	0	0
IDAHO	246	12	190	0	23	0	0	0	0	18	3	0
ILLINOIS	1,438	56	765	32	319	32	1	0	0	228	4	1
INDIANA	699	115	412	4	86	10	1	0	0	70	0	1
IOWA	984	18	795	0	42	0	0	0	0	127	0	2
KANSAS	683	3	580	0	26	0	0	0	0	74	0	0
KENTUCKY	478	15	366	3	74	2	0	2	0	14	1	1
LOUISIANA	545	0	443	1	73	0	0	0	1	26	0	1
MAINE	267	48	145	8	35	11	0	4	0	11	5	0
MARYLAND	437	9	262	6	86	2	2	0	0	66	4	0
MASSACHUSETTS	277	25	108	9	118	0	2	0	1	7	6	1
MICHIGAN	1,068	62	406	10	328	31	1	11	1	208	8	2
MINNESOTA	919	14	537	14	155	4	0	0	0	183	12	0
MISSISSIPPI	667	0	498	6	104	0	0	0	0	57	0	2
MISSOURI	928	12	616	4	104	0	0	0	0	191	0	1
MONTANA	202	16	164	0	3	0	0	0	0	18	1	0
NEBRASKA	616	3	462	0	65	0	0	0	0	86	0	0
NEVADA	93	0	69	2	11	0	0	0	0	9	0	2
NEW HAMPSHIRE	183	18	91	1	35	2	2	0	0	2	32	0
NEW JERSEY	679	7	120	27	398	20	0	0	1	106	0	0
NEW MEXICO	212	0	160	0	14	0	0	0	0	38	0	0
NEW YORK	2,082	62	723	51	645	16	4	4	2	547	28	0
NORTH CAROLINA	865	1	607	21	199	0	0	0	0	34	3	0
NORTH DAKOTA	374	7	286	0	2	0	0	0	0	77	2	0
OHIO	1,201	106	678	5	316	10	0	0	1	84	1	0
OKLAHOMA	759	0	582	2	38	0	0	0	0	135	0	2
OREGON	299	8	220	3	53	2	0	0	0	13	0	0
PENNSYLVANIA	2,301	83	1,118	35	821	26	0	4	0	209	5	0
RHODE ISLAND	40	1	23	1	14	1	0	0	0	0	0	0
SOUTH CAROLINA	451	0	273	12	155	0	0	1	0	10	0	0
SOUTH DAKOTA	348	10	267	0	1	0	0	0	0	70	0	0
TENNESSEE	369	4	277	4	80	0	0	0	0	4	0	0
TEXAS	2,644	0	2,183	37	362	0	0	5	1	55	1	0
UTAH	283	1	176	1	78	0	0	0	0	27	0	0
VERMONT	119	30	67	0	12	1	0	0	1	3	5	0
VIRGINIA	744	7	283	17	181	4	2	2	0	247	0	1
WASHINGTON	466	29	295	9	103	7	0	0	0	17	4	2
WEST VIRGINIA	654	45	451	1	115	2	1	0	0	37	2	0
WISCONSIN	1,001	10	593	17	230	2	2	0	0	144	3	0
WYOMING	136	1	110	0	14	0	0	0	0	10	1	0
AMERICAN SAMOA	1	0	1	0	0	0	0	0	0	0	0	0
GUAM	7	0	6	0	1	0	0	0	0	0	0	0
N. MARIANAS	4	0	3	0	0	0	0	0	0	1	0	0
PUERTO RICO	34	1	30	0	3	0	0	0	0	0	0	0
PAC. TR. TERR.	30	0	21	0	0	0	0	0	0	9	0	0
VIRGIN ISLANDS	5	0	5	0	0	0	0	0	0	0	0	0
U.S. TOTALS	32,383	870	19,589	414	6,459	195	58	44	11	4,365	154	32

TABLE 3

NUMBER AND NATURE OF WASTEWATER FACILITIES
(EXISTING AND PLANNED)
NATIONAL SUMMARY

Table 3 is a two part table. The upper table is a condensation of Tables 1 and 2 into a national summary. A facility is included in the Existing category if it was operational in 1982. A facility listed as To Be Abandoned was operational in 1982 and is expected to be phased out by 2000. A facility listed as Under Construction was in the process of being built in 1982. A facility in the To Be Built category was not in operation or under construction in 1982 but is projected to be operational by 2000. The Total row lists the total number of facilities expected to be in operation in the year 2000.

It should be noted that the values listed in the various columns are not additive. For example, the Sewer Systems column lists 27,267 facilities in the Total or year 2000 row. However, by starting with the Existing row and performing the indicated additions (To be Built and Under Construction) and subtractions (To be Abandoned), the resulting value would be 27,468. This difference of 201 facilities arises because of the special or unusual situations encountered in the course of data collection and are sometimes difficult to describe using the limited coding available in the Survey.

The lower table summarizes the nature of projected changes to existing wastewater treatment plants. Only treatment plants in operation in 1982 are included. A brief explanation of the projected change categories follows:

Enlarge: The hydraulic capacity of a plant will be increased while the degree of treatment the plant will be capable of achieving will remain the same.

Upgrade: The degree of treatment that a plant is capable of achieving will be improved but hydraulic capacity will remain the same.

Enlarge and Upgrade: Both the hydraulic capacity of a plant will be increased and the degree of treatment the plant is capable of achieving will be improved.

Replace: This describes the situation when an existing plant is demolished and a completely new plant is constructed on the same site.

Abandon: The treatment plant is taken out of operation and abandoned, and the sewage is diverted to another facility for treatment.

No Change: This category is for plants that will remain essentially unchanged through the year 2000.

Other: A number of situations are covered by this category. One common situation is a treatment plant which will require a capital expenditure, such as for a new sludge digestor, but the degree of treatment and hydraulic capacity will not be changed.

Abandon, Retain Sewers: This change is indicated when an authority that operates a treatment plant and a collection system takes the treatment plant out of operation and continues to operate the collection system. The sewage is diverted to a treatment plant operated by a different authority. This situation usually occurs when a regional treatment plant is constructed to serve several communities.

DECEMBER 31, 1982
TABLE 3

1982 NEEDS SURVEY

NUMBER AND NATURE OF WASTEWATER FACILITIES

(EXISTING AND PLANNED)

NATIONAL SUMMARY

**************************** NUMBER OF FACILITIES ****************************

	TREATMENT PLANTS	INTERMED. PLANTS	SEWER SYSTEMS	SLUDGE FACILITIES	TRUNK SEWERS	ONSITE SYSTEMS	OTHER
EXISTING:	15,431	15	19,041	6	26	12,977	112
TO BE ABANDONED:	1,477	1	296	1	0	8,412	82
UNDER CONSTRUCTION:	447	2	587	2	3	0	0
TO BE BUILT:	6,627	1	8,136	4	15	0	15
TOTAL:	21,027	32	27,267	11	44	4,565	50

************************** NATURE OF PROJECTED CHANGE **************************
(EXISTING PLANTS)

ENLARGE	UPGRADE	ENLARGE AND UPGRADE	REPLACE	ABANDON	NO CHANGE	OTHER	ABANDON, RETAIN SEWERS
1,949	1,722	2,161	1,403	326	5,960	758	1,151

TABLE 4

NUMBER AND FLOW BY STATE OF TREATMENT PLANTS BY DESIGN CAPACITY (EXISTING)

Table 4 is a flow summary of all treatment plants in operation in 1982. Excluded are treatment plants projected to be built and treatment plants under construction in 1982. A summary is provided for each State and U.S. Territory. National totals are summarized at the bottom of the table.

In the second column the total number of existing treatment plants in each State is reported. Column three represents the total wastewater treatment capacity of the plants in thousand cubic meters per day. The present design flow for each plant was used to calculate the total treatment capacity value. The present design flow may be equal to, greater, or less than the existing flow for any particular plant.

Subsequent columns provide a breakdown of the State totals into five flow ranges. The ranges specified in the column headings are reported in thousand cubic meters per day and, in parentheses under the headings, in million gallons per day. Reported for each flow range are the number of plants in the range and their total treatment capacity (M^3/day x 1,000). Also reported is the percentage of the total State treatment capacity that is accounted for by each flow range.

These data are for all types of treatment plants regardless of level of treatment. Numerous other tables follow which provide summaries by level of treatment for both existing plants and projected plants.

The data indicate nearly 80 percent of the treatment plants in operation in 1982 have a design capacity less than or equal to 1.05 mgd (4×10^6 M^3/day). These small plants account for 8.3 percent of the total U.S. wastewater treatment capacity. The data also indicate 0.6 percent of the treatment plants in operation in 1982 have a design capacity greater than or equal to 50.2 mgd (1.9×10^8 M^3/day). These large plants account for 39 percent of the total U.S. wastewater treatment capacity.

Some column entries will be found which list a value for the number of plants but show zero for Total Design Flow or Percent of Flow. This occurs when the design flow value is less than 0.5 or the percent value is less than 0.05; in these cases the value is rounded to zero.

DECEMBER 31, 1982
TABLE 4

1982 NEEDS SURVEY

NUMBER AND FLOW BY STATE OF TREATMENT PLANTS BY DESIGN CAPACITY

(EXISTING)

CUBIC METERS PER DAY X 1000: (MILLION GALLONS PER DAY):			***** 0-.40 ****** (0-.105)			**** .401-4.0 **** (.106-1.05)			**** 4.001-40 **** (1.06-10.5)			*** 40.001-190 *** (10.57-50.2)			****** 190+ ****** (50.2+)		
STATE	TOTAL # OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	% OF STATE FLOW	# OF PLANTS	TOTAL FLOW	% OF STATE FLOW	# OF PLANTS	TOTAL FLOW	% OF STATE FLOW	# OF PLANTS	TOTAL FLOW	% OF STATE FLOW	# OF PLANTS	TOTAL FLOW	% OF STATE FLOW
ALABAMA	237	1,728	24	6	0.3	146	235	13.6	60	799	46.2	7	687	39.7	0	0	0.0
ALASKA	48	225	27	3	1.6	13	19	8.4	7	73	32.7	1	128	56.9	0	0	0.0
ARIZONA	113	1,168	39	6	0.5	53	84	7.2	16	172	14.7	4	450	38.5	1	454	38.8
ARKANSAS	285	1,030	78	20	2.0	156	203	19.7	47	552	53.5	4	253	24.6	0	0	0.0
CALIFORNIA	589	12,698	135	26	0.2	237	371	2.9	166	2,361	18.5	39	3,059	24.0	12	6,881	54.1
COLORADO	282	1,697	118	25	1.5	116	181	10.6	41	437	25.7	6	409	24.1	1	643	37.9
CONNECTICUT	102	2,071	8	2	0.1	31	65	3.1	50	835	40.3	12	941	45.4	1	227	10.9
DELAWARE	21	434	4	0	0.1	12	21	5.0	4	71	16.4	0	0	0.0	1	340	78.3
DIST. OF COLUM.	1	1,169	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	1	1,169	99.9
FLORIDA	246	4,306	16	3	0.0	99	194	4.5	112	1,688	39.2	15	1,473	34.2	4	946	21.9
GEORGIA	387	3,011	90	18	0.6	206	325	10.8	74	934	31.0	16	1,277	42.4	1	454	15.0
HAWAII	33	639	6	1	0.2	9	16	2.5	16	216	33.9	1	94	14.7	1	310	48.5
IDAHO	170	552	62	13	2.3	84	73	13.3	20	242	43.8	4	223	40.4	0	0	0.0
ILLINOIS	740	10,920	170	42	0.3	408	540	4.9	134	1,613	14.7	23	1,587	14.5	5	7,136	65.3
INDIANA	353	3,936	52	15	0.4	217	287	7.3	61	718	18.2	19	1,533	38.9	4	1,381	35.0
IOWA	681	1,539	375	73	4.8	252	262	17.0	46	512	33.3	8	689	44.7	0	0	0.0
KANSAS	560	1,273	318	60	4.7	201	249	19.5	37	521	40.9	4	442	34.7	0	0	0.0
KENTUCKY	222	1,308	40	10	0.7	138	170	13.0	39	458	35.0	4	272	20.8	1	397	30.3
LOUISIANA	307	1,907	63	12	0.6	172	277	14.5	64	710	37.2	7	445	23.3	1	461	24.2
MAINE	96	527	16	3	0.5	45	70	13.3	32	295	55.9	3	159	30.1	0	0	0.0
MARYLAND	148	2,056	46	8	0.4	68	90	4.3	28	428	20.8	7	467	22.7	2	1,059	51.5
MASSACHUSETTS	110	4,033	8	1	0.0	37	73	1.8	49	631	15.6	11	953	23.6	3	2,373	58.8
MICHIGAN	372	6,728	68	18	0.2	198	273	4.0	84	859	12.7	19	1,862	27.6	3	3,713	55.1
MINNESOTA	510	2,044	243	50	2.4	221	256	12.5	39	426	20.8	6	485	23.7	1	825	40.3
MISSISSIPPI	324	992	76	24	2.4	180	247	24.9	38	470	47.4	2	249	25.1	0	0	0.0
MISSOURI	580	3,284	241	49	1.5	245	384	10.9	86	610	18.7	5	505	15.5	3	1,733	53.2
MONTANA	157	417	80	13	3.1	63	82	19.7	12	162	38.9	2	158	38.0	0	0	0.0
NEBRASKA	452	1,010	316	46	4.6	112	123	12.2	21	261	25.8	2	302	29.9	1	276	27.3
NEVADA	48	676	15	2	0.3	21	29	4.3	9	75	11.1	2	227	33.6	1	340	50.4
NEW HAMPSHIRE	66	487	8	1	0.3	37	59	12.2	18	210	43.1	3	215	44.2	0	0	0.0
NEW JERSEY	228	4,909	12	2	0.0	95	186	3.7	100	1,319	26.8	17	1,610	32.8	4	1,790	36.4
NEW MEXICO	103	453	39	7	1.5	41	67	14.7	22	231	51.0	1	147	32.5	0	0	0.0
NEW YORK	463	11,656	65	14	0.1	229	362	3.1	133	1,768	15.1	21	1,989	17.0	15	7,521	64.5
NORTH CAROLINA	516	2,608	241	22	0.8	166	265	10.1	98	1,454	55.7	11	865	33.1	0	0	0.0
NORTH DAKOTA	279	166	230	27	16.2	40	37	22.3	9	102	61.4	0	0	0.0	0	0	0.0
OHIO	696	7,051	195	38	0.5	334	476	6.7	139	1,772	25.1	28	1,671	23.6	8	3,092	43.8
OKLAHOMA	485	1,221	244	46	3.8	191	243	19.9	47	588	48.2	3	342	28.0	0	0	0.0
OREGON	206	1,691	42	9	0.5	111	164	9.7	45	556	32.9	7	581	34.3	1	378	22.3
PENNSYLVANIA	639	6,662	103	19	0.2	334	541	8.1	186	2,306	34.6	10	875	13.1	6	2,918	43.8
RHODE ISLAND	20	648	0	0	0.0	6	8	1.2	10	176	27.2	3	221	34.1	1	242	37.3
SOUTH CAROLINA	240	1,351	42	10	0.7	135	198	14.7	57	704	52.1	6	438	32.4	0	0	0.0
SOUTH DAKOTA	263	272	182	29	10.8	69	70	26.0	12	171	63.1	0	0	0.0	0	0	0.0
TENNESSEE	234	2,566	28	4	0.2	137	211	8.2	61	676	26.3	5	511	20.0	3	1,158	45.1
TEXAS	1,352	7,561	426	81	1.0	678	1,027	13.5	216	2,447	32.3	26	1,957	25.9	6	2,044	27.0
UTAH	92	1,053	22	4	0.4	38	52	4.9	26	386	36.7	6	609	57.8	0	0	0.0
VERMONT	85	230	22	4	2.0	46	70	30.5	17	155	67.4	0	0	0.0	0	0	0.0
VIRGINIA	235	2,453	74	15	0.6	110	146	5.9	33	413	16.8	16	1,408	57.3	2	469	19.1
WASHINGTON	244	2,219	53	12	0.5	120	179	8.0	62	793	35.7	8	760	34.2	1	473	21.3
WEST VIRGINIA	146	640	27	7	1.1	91	123	19.2	24	220	34.5	4	288	45.1	0	0	0.0
WISCONSIN	562	3,471	245	53	1.5	241	332	9.5	59	652	18.7	14	1,080	31.1	3	1,353	38.9
WYOMING	109	193	62	9	4.7	34	42	22.0	13	141	73.2	0	0	0.0	0	0	0.0
AMERICAN SAMOA	2	4	0	0	0.0	2	4	99.9	0	0	0.0	0	0	0.0	0	0	0.0
GUAM	7	99	1	0	0.0	4	8	8.5	0	0	0.0	2	90	91.3	0	0	0.0
N. MARIANAS	2	4	0	0	0.0	2	4	99.9	0	0	0.0	0	0	0.0	0	0	0.0
PUERTO RICO	32	412	0	0	0.0	20	31	7.7	7	66	16.0	5	314	76.2	0	0	0.0
PAC. TR. TERR.	6	12	2	0	6.2	4	11	93.7	0	0	0.0	0	0	0.0	0	0	0.0
VIRGIN ISLANDS	5	36	1	0	0.2	0	0	0.0	4	36	99.7	0	0	0.0	0	0	0.0
U.S. TOTALS	15,431	133,503	5,128	991	0.7	7,031	10,112	7.5	2,760	34,500	25.8	421	35,327	26.4	99	52,578	39.3

TABLE 5

NUMBER AND FLOW BY STATE OF TREATMENT PLANTS BY DESIGN CAPACITY
(YEAR 2000)

Table 5 is a flow summary of all treatment plants projected to be in operation in the year 2000. Excluded are plants that were operational in 1982 and are projected to be abandoned by 2000.

The projected design flow was used to calculate the total treatment capacity value. All other computations used to prepare this table are directly comparable to the methods used to prepare Table 4.

All flows are reported in thousand cubic meters per day.

The data indicate nearly 82 percent of the treatment plants projected to be operational in 2000 will have a design capacity less than or equal to 1.05 mgd (4×10^6 M^3/day). These small plants will account for 8.1 percent of the total U.S. wastewater treatment capacity. The data also indicate 0.6 percent of the treatment plants projected to be operational in 2000 will have a design capacity greater than or equal to 50.2 mgd (1.9×10^8 M^3/day). These large plants will account for 40 percent of the total U.S. wastewater treatment capacity.

Some column entries will be found which list a value for the number of plants but show zero for Total Design Flow or Percent of Flow. This occurs when the design flow value is less than 0.5 or the percent value is less than 0.05; in these cases the value is rounded to zero.

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TABLE 5

1982 NEEDS SURVEY

NUMBER AND FLOW BY STATE OF TREATMENT PLANTS BY DESIGN CAPACITY

(YEAR 2000)

CUBIC METERS PER DAY X 1000: (MILLION GALLONS PER DAY):			***** 0-.40 ***** (0-.105)			**** .401-4.0 **** (.106-1.05)			**** 4.001-40 **** (1.06-10.5)			*** 40.001-190 *** (10.57-50.2)			***** 190+ ***** (50.2+)		
STATE	TOTAL # OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	% OF STATE FLOW	# OF PLANTS	TOTAL FLOW	% OF STATE FLOW	# OF PLANTS	TOTAL FLOW	% OF STATE FLOW	# OF PLANTS	TOTAL FLOW	% OF STATE FLOW	# OF PLANTS	TOTAL FLOW	% OF STATE FLOW
ALABAMA	342	3,079	80	20	0.6	170	243	7.9	77	861	27.9	13	992	32.2	2	961	31.2
ALASKA	126	369	98	13	3.5	20	29	7.9	18	170	46.1	1	154	42.3	0	0	0.0
ARIZONA	170	1,539	30	8	0.5	97	146	9.5	29	305	19.8	8	511	33.2	1	567	36.8
ARKANSAS	404	1,218	269	50	4.1	107	192	15.8	32	582	47.9	6	390	32.0	0	0	0.0
CALIFORNIA	917	13,412	349	70	0.5	340	478	3.5	174	2,570	19.1	40	3,053	22.7	14	7,239	53.9
COLORADO	291	2,038	104	21	1.0	121	166	8.1	58	596	29.2	7	553	27.1	1	700	34.3
CONNECTICUT	103	2,066	10	2	0.1	29	46	2.2	52	919	44.5	11	869	42.0	1	227	10.9
DELAWARE	22	588	4	0	0.0	12	27	4.7	3	35	6.0	2	140	23.7	1	384	65.3
DIST. OF COLUM.	1	1,169	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	1	1,169	99.9
FLORIDA	319	6,958	23	5	0.0	136	206	2.9	120	1,782	25.6	33	2,467	35.4	7	2,492	35.8
GEORGIA	420	3,717	99	23	0.6	210	308	8.3	91	1,179	31.7	19	1,827	49.1	1	378	10.1
HAWAII	44	679	2	0	0.0	20	42	6.2	20	231	34.1	1	94	13.9	1	310	45.6
IDAHO	205	706	99	19	2.7	77	99	14.0	23	259	36.6	6	329	46.5	0	0	0.0
ILLINOIS	857	12,335	285	63	0.5	401	540	4.3	140	1,716	13.9	26	1,929	15.6	5	8,085	65.5
INDIANA	531	4,157	193	42	1.0	236	286	6.8	79	913	21.9	19	1,533	36.8	4	1,381	33.2
IOWA	813	1,754	498	87	4.9	254	286	16.3	52	567	32.3	9	813	46.3	0	0	0.0
KANSAS	593	1,419	348	58	4.1	192	219	15.4	46	614	43.2	4	329	23.2	1	196	13.8
KENTUCKY	385	1,974	154	36	1.8	165	201	10.1	57	617	31.2	7	494	25.0	2	624	31.6
LOUISIANA	444	2,471	158	33	1.3	196	275	11.1	80	938	37.9	8	563	22.7	2	660	26.7
MAINE	206	647	83	16	2.5	84	109	16.9	35	318	49.2	4	202	31.2	0	0	0.0
MARYLAND	261	2,376	136	26	1.1	87	123	5.1	26	397	16.7	10	744	31.3	2	1,083	45.6
MASSACHUSETTS	146	4,799	15	2	0.0	58	93	1.9	65	907	18.9	13	1,137	23.6	5	2,657	55.3
MICHIGAN	484	7,496	118	29	0.3	284	350	4.7	91	983	13.1	17	1,762	23.5	6	4,361	58.1
MINNESOTA	577	2,461	304	59	2.4	223	277	11.2	43	498	20.2	6	528	21.4	1	1,097	44.5
MISSISSIPPI	384	1,364	201	48	3.5	169	213	15.6	31	682	49.9	2	163	11.9	1	257	18.8
MISSOURI	632	3,430	311	59	1.7	248	346	10.6	61	728	21.1	9	1,001	29.0	3	1,294	37.5
MONTANA	181	485	75	15	3.5	78	98	19.7	14	198	41.8	2	165	34.0	0	0	0.0
NEBRASKA	465	1,058	317	51	4.0	120	134	12.6	24	274	25.9	3	333	31.5	1	264	25.0
NEVADA	71	805	36	7	0.9	20	25	3.1	12	139	17.2	2	293	36.4	1	340	42.2
NEW HAMPSHIRE	142	802	41	10	1.2	68	94	11.7	29	324	40.4	3	176	21.9	1	196	24.5
NEW JERSEY	154	5,351	2	0	0.0	39	82	1.5	87	1,254	23.4	21	1,553	29.0	5	2,460	45.9
NEW MEXICO	160	697	82	16	2.4	54	83	12.0	23	307	44.0	0	0	0.0	1	289	41.5
NEW YORK	864	14,072	275	37	0.4	358	550	3.9	184	2,110	14.9	28	2,251	16.0	19	9,101	64.6
NORTH CAROLINA	632	3,365	329	39	1.1	184	270	8.0	100	1,587	47.1	19	1,467	43.6	0	0	0.0
NORTH DAKOTA	295	216	230	28	13.4	47	42	19.9	18	143	66.6	0	0	0.0	0	0	0.0
OHIO	790	8,268	275	57	0.7	323	426	5.1	157	2,104	25.4	27	2,067	25.0	8	3,603	43.6
OKLAHOMA	584	1,524	317	58	3.8	211	260	17.0	80	595	39.0	5	382	25.0	1	227	14.8
OREGON	231	1,914	62	14	0.7	117	175	9.1	44	617	32.2	7	729	38.0	1	378	19.7
PENNSYLVANIA	1,241	8,212	403	80	1.0	590	832	10.2	230	2,683	32.6	12	1,031	12.5	6	3,570	43.4
RHODE ISLAND	25	824	5	1	0.1	3	5	0.7	11	163	19.7	5	351	42.6	1	302	36.7
SOUTH CAROLINA	285	1,779	80	16	0.9	122	175	9.8	76	1,029	57.8	7	559	31.4	0	0	0.0
SOUTH DAKOTA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TENNESSEE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TEXAS	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
UTAH	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
VERMONT	102	271	36	7	2.6	47	67	24.6	19	197	72.6	0	0	0.0	0	0	0.0
VIRGINIA	307	3,160	98	19	0.6	151	205	6.4	43	515	16.3	20	1,757	55.6	3	662	20.9
WASHINGTON	337	2,861	100	23	0.8	157	205	7.1	69	908	31.7	8	553	19.3	3	1,170	40.8
WEST VIRGINIA	499	1,049	175	40	3.8	281	372	35.4	39	360	34.3	4	276	26.2	0	0	0.0
WISCONSIN	623	3,876	264	53	1.3	275	387	9.9	67	787	20.3	14	1,105	28.5	3	1,542	39.7
WYOMING	112	316	62	7	2.3	33	40	12.7	16	200	63.3	1	68	21.5	0	0	0.0
AMERICAN SAMOA	1	23	0	0	0.0	0	0	0.0	1	23	99.9	0	0	0.0	0	0	0.0
GUAM	6	100	0	0	0.0	3	0	0.6	1	4	4.0	2	90	90.2	0	0	0.0
N. MARIANAS	3	20	0	0	0.0	1	0	4.3	2	19	95.6	0	0	0.0	0	0	0.0
PUERTO RICO	31	1,386	0	0	0.0	7	19	1.8	15	288	13.9	8	806	61.7	1	272	20.0
PAC. TR. TERR.	21	37	4	0	2.5	14	17	46.5	3	19	50.9	0	0	0.0	0	0	0.0
VIRGIN ISLANDS	5	81	0	0	0.0	1	0	1.7	4	80	98.2	0	0	0.0	0	0	0.0
U.S. TOTALS	21,827	161,778	8,701	1,686	1.0	8,460	11,596	7.1	3,213	40,643	25.1	524	42,438	26.2	129	65,446	40.4

TABLE 6

AVERAGE DOMESTIC FLOWS BY STATE
PRESENT, PROJECTED, AND PERCENT CHANGE

Table 6 summarizes the present (1982) and projected (2000) quantity of flow treated by publicly owned treatment plants that is from domestic sources. A similar summary dealing with flow from industrial sources is presented in Table 7.

A further explanation of these summaries is presented below:

Actual: All flows reported in this category were compiled from the actual average daily flow received at treatment works during the most recent 12 month period for which information is available. Flows reported in this category were compiled from records collected between late 1980 and early 1982. The major source of flow information was the self-monitoring reports that are completed by every facility with an NPDES permit.

Present Design: All flows reported in this category were compiled from the average daily flow a treatment plant is designed to handle. The design capacity reported was the capacity in place in 1982.

Projected Design: All flows reported in this category were compiled from the average daily flow that a treatment plant will be designed to handle in 2000.

Total Flow: The total flow is expressed in thousand cubic meters per day. Total flow is defined as all wastewaters moving through the treatment plant from all sources including domestic, commercial, industrial, and infiltration/inflow.

Domestic Flow: The domestic flow is expressed in thousand cubic meters per day. For this table domestic flow includes all wastewaters moving through the treatment plant from all sources except industrial sources.

Liters/Capita/Day: These values were calculated using the domestic flow and the total resident and nonresident population. The actual number of residents and nonresidents receiving treatment in 1982 was used in the Actual and Present Design categories. The number of residents and nonresidents a treatment plant will be capable of serving in the year 2000 was used in the Projected Design category.

Percent Change: This category presents a comparison between the present situation (1982) and the projected situation (2000). The change in each parameter between the present design and the projected design is expressed as an increase or decrease using the present design as the base.

All flows are reported in thousand cubic meters per day.

DECEMBER 31, 1982
TABLE 6

1982 NEEDS SURVEY

AVERAGE DOMESTIC FLOWS BY STATE
PRESENT, PROJECTED AND PERCENT CHANGE
(THOUSANDS OF CUBIC METERS PER DAY)

STATE	******* ACTUAL *******			**** PRESENT DESIGN ***			*** PROJECTED DESIGN ***			***** PERCENT CHANGE ******		
	TOTAL FLOW	DOM. FLOW	LITERS / CAP./DAY	TOTAL FLOW	DOM. FLOW	LITERS / CAP./DAY	TOTAL FLOW	DOM. FLOW	LITERS / CAP./DAY	TOTAL FLOW	DOM. FLOW	LITERS / CAP./DAY
ALABAMA	1,334	1,118	512	1,728	1,487	681	3,079	2,705	741	+78.1	+81.8	+8.7
ALASKA	159	145	712	225	207	1,016	369	350	516	+63.4	+68.7	-49.2
ARIZONA	817	798	351	1,168	1,114	494	1,539	1,474	348	+31.7	+32.3	-29.5
ARKANSAS	672	539	416	1,030	912	704	1,215	1,042	417	+18.0	+14.2	-40.7
CALIFORNIA	9,060	7,562	376	12,700	10,502	523	13,412	11,119	402	+5.6	+5.8	-23.1
COLORADO	1,279	1,084	388	1,697	1,464	514	2,038	1,799	393	+20.0	+22.8	-23.4
CONNECTICUT	1,317	1,089	563	2,071	1,627	842	2,064	1,663	544	-0.3	+2.2	-35.3
DELAWARE	322	181	333	434	290	532	588	427	400	+35.4	+47.1	-24.8
DIST. OF COLUM.	1,169	1,169	621	1,169	1,169	621	1,169	1,169	520	+0.0	+0.0	-16.2
FLORIDA	4,377	4,128	664	4,306	3,985	641	6,955	6,558	464	+61.5	+64.5	-27.5
GEORGIA	2,033	1,647	488	3,011	2,394	710	3,717	2,993	496	+23.4	+25.0	-30.0
HAWAII	395	357	549	639	605	931	679	626	452	+6.2	+3.4	-51.4
IDAHO	367	324	633	552	480	939	706	628	563	+27.8	+30.9	-39.9
ILLINOIS	8,025	6,508	657	10,928	9,017	911	12,335	10,138	836	+12.9	+12.4	-8.3
INDIANA	3,618	3,050	824	3,936	3,140	846	4,157	3,274	623	+5.5	+4.2	-26.4
IOWA	1,152	951	443	1,539	1,266	590	1,754	1,427	491	+13.9	+12.7	-16.7
KANSAS	851	728	394	1,273	1,076	583	1,419	1,207	475	+11.4	+12.2	-18.5
KENTUCKY	998	756	423	1,308	973	545	1,974	1,511	465	+50.8	+55.2	-14.6
LOUISIANA	1,239	1,193	413	1,907	1,857	643	2,471	2,345	478	+29.5	+26.2	-25.7
MAINE	379	298	486	527	414	676	647	526	526	+22.5	+27.0	-22.1
MARYLAND	1,401	1,187	405	2,055	1,842	752	2,376	2,028	474	+15.6	+10.1	-36.9
MASSACHUSETTS	3,253	2,489	637	4,033	3,006	778	4,799	3,597	613	+18.9	+19.6	-20.3
MICHIGAN	5,209	4,080	577	6,728	5,246	742	7,496	5,857	647	+11.4	+11.6	-12.7
MINNESOTA	1,632	1,170	390	2,044	1,527	505	2,461	1,810	473	+20.3	+18.5	-6.4
MISSISSIPPI	752	630	433	992	897	610	1,364	1,229	522	+37.4	+36.9	-14.3
MISSOURI	2,260	1,859	447	3,254	2,527	608	3,450	2,672	443	+6.0	+5.7	-27.1
MONTANA	256	249	504	417	407	824	455	441	602	+9.2	+8.4	-26.8
NEBRASKA	669	528	419	1,010	833	662	1,058	809	469	+4.7	-2.8	-29.1
NEVADA	398	397	306	674	672	856	805	784	526	+19.4	+16.6	-38.5
NEW HAMPSHIRE	305	238	542	487	374	881	802	621	616	+64.5	+65.8	-30.1
NEW JERSEY	4,258	3,446	514	4,909	4,423	660	5,351	4,065	442	+9.0	-8.0	-32.9
NEW MEXICO	345	320	349	453	429	467	697	666	431	+53.7	+55.2	-7.7
NEW YORK	9,124	8,278	593	11,656	10,420	747	14,072	12,519	628	+20.7	+20.1	-15.9
NORTH CAROLINA	1,719	1,165	436	2,608	1,859	699	3,365	2,334	481	+29.0	+25.5	-31.1
NORTH DAKOTA	161	138	294	166	154	349	214	195	337	+28.6	+26.4	-3.5
OHIO	5,626	4,611	541	7,051	5,677	666	8,260	6,525	536	+17.1	+14.9	-19.4
OKLAHOMA	746	699	375	1,221	1,159	623	1,524	1,393	420	+24.7	+20.2	-32.5
OREGON	1,195	946	637	1,691	1,387	934	1,914	1,624	523	+13.2	+17.0	-44.0
PENNSYLVANIA	5,531	4,771	503	6,662	5,762	608	8,212	7,149	552	+23.2	+24.0	-9.2
RHODE ISLAND	404	327	498	648	467	710	824	567	588	+27.1	+21.5	-17.1
SOUTH CAROLINA	859	686	407	1,351	1,075	721	1,779	1,291	400	+31.7	+20.1	-44.5
SOUTH DAKOTA	202	174	372	272	241	515	317	279	414	+16.4	+15.8	-19.6
TENNESSEE	1,799	1,316	593	2,566	1,901	859	3,401	2,463	563	+32.5	+29.5	-34.4
TEXAS	6,287	5,632	487	[illegible]	6,934	562	10,872	9,230	448	+33.2	+33.1	-20.1
UTAH	812	715	[illegible]	1,053	928	691	1,322	1,142	530	+25.5	+23.3	-23.3
VERMONT	189	163	[illegible]	230	216	823	271	243	577	+17.8	+12.6	-29.9
VIRGINIA	1,677	1,418	398	2,453	2,017	566	3,160	2,588	428	+28.8	+28.3	-24.4
WASHINGTON	1,618	1,415	948	2,219	1,957	753	2,861	2,488	516	+28.9	+26.7	-31.4
WEST VIRGINIA	388	326	390	640	584	697	1,049	926	443	+63.9	+58.6	-36.4
WISCONSIN	2,328	1,739	513	3,471	2,468	728	3,876	2,799	567	+11.6	+13.4	-22.8
WYOMING	174	173	503	193	193	562	316	305	481	+63.1	+57.8	-14.3
AMERICAN SAMOA	1	1	1,861	4	4	2,723	23	12	380	+425.4	+179.6	-86.0
GUAM	34	34	446	99	99	1,296	100	100	476	+1.1	+1.1	-63.2
N. MARIANAS	2	2	1,615	4	4	2,957	20	20	634	+318.3	+318.3	-78.5
PUERTO RICO	517	460	266	412	363	286	1,306	1,064	328	+217.1	+193.1	+58.8
PAC. TR. TERR.	1	1	111	12	12	1,070	37	37	356	+213.1	+214.4	-66.9
VIRGIN ISLANDS	24	24	298	36	36	448	51	51	391	+40.1	+40.1	-12.7
U.S. TOTALS	101,794	85,374	504	133,983	112,089	662	161,770	134,925	513	+21.1	+20.3	-22.5

NOTES: 1. FLOWS IN CUBIC METERS X 1000 2. SUM OF ENTRIES MAY NOT EQUAL TOTALS DUE TO ROUND-OFFS

TABLE 7

AVERAGE INDUSTRIAL FLOWS BY STATE
PRESENT, PROJECTED, AND PERCENT CHANGE

Table 7 summarizes the present (1982) and projected (2000) quantity of flow treated by publicly owned treatment plants that is of industrial origin. This table is an extension of the summary presented in Table 6.

A further explanation of these summaries is presented below:

Actual: All flows reported in this category were compiled from the actual average daily flow received at treatment works during the most recent 12 month period for which information is available. Flows reported in this category were compiled from records collected between late 1980 and early 1982. The major source of flow information was the self-monitoring reports that are completed by every facility with an NPDES permit.

Present Design: All flows reported in this category were compiled from the average daily flow a treatment plant is designed to handle. The design capacity reported was the capacity in place in 1982.

Projected Design: All flows reported in this category were compiled from the average daily flow that a treatment plant will be designed to handle in the year 2000.

Total Flow: The total flow is expressed in thousand cubic meters per day. Total flow is defined as all wastewaters moving through the treatment plant from all sources including domestic, commercial, industrial, and infiltration/inflow.

Industrial Flow: This includes only wastewater generated by industry. Excluded were flows originating from domestic sources, commercial users, and infiltration/inflow.

Percent Change: This category presents a comparison between the present situation (1982) and the projected situation (2000). The change in each parameter between the present design and the projected design is expressed as an increase or decrease using the present design as the base.

All flows are reported in thousand cubic meters per day.

DECEMBER 31, 1982
TABLE 7

1982 NEEDS SURVEY

AVERAGE INDUSTRIAL FLOWS BY STATE
PRESENT, PROJECTED AND PERCENT CHANGE
(THOUSANDS OF CUBIC METERS PER DAY)

	******** ACTUAL *******			*** PRESENT DESIGN ****			**** PROJECTED DESIGN ***			** PERCENT CHANGE **	
STATE	TOTAL FLOW	IND. FLOW	IND. %	TOTAL FLOW	IND. FLOW	IND. %	TOTAL FLOW	IND. FLOW	IND. %	TOTAL FLOW	IND. FLOW
ALABAMA	1,334	216	16.2	1,728	240	13.9	3,079	374	12.1	+78.1	+55.3
ALASKA	159	14	9.0	225	18	8.1	369	19	5.1	+63.4	+5.4
ARIZONA	617	26	3.2	1,168	54	4.6	1,539	64	4.2	+31.7	+19.8
ARKANSAS	672	132	19.7	1,030	118	11.4	1,215	173	14.2	+18.0	+47.1
CALIFORNIA	9,060	1,497	16.5	12,700	2,197	17.3	13,412	2,293	17.1	+5.6	+4.3
COLORADO	1,279	194	15.2	1,697	233	13.7	2,038	239	11.7	+20.0	+2.6
CONNECTICUT	1,317	227	17.3	2,071	444	21.4	2,064	401	19.4	-0.3	-9.6
DELAWARE	322	140	43.6	434	144	33.1	588	161	27.4	+35.4	+11.8
DIST. OF COLUM.	1,169	0	0.0	1,169	0	0.0	1,169	0	0.0	+0.0	+0.0
FLORIDA	4,377	249	5.6	4,306	321	7.4	6,955	397	5.7	+61.5	+23.8
GEORGIA	2,033	386	19.0	3,011	616	20.4	3,717	723	19.4	+23.4	+17.4
HAWAII	395	38	9.7	639	34	5.3	679	53	7.8	+6.2	+56.6
IDAHO	367	43	11.9	552	72	13.0	706	77	11.0	+27.8	+7.0
ILLINOIS	8,025	1,524	18.9	10,920	1,903	17.4	12,335	2,197	17.8	+12.9	+15.4
INDIANA	3,618	560	15.4	3,936	796	20.2	4,157	882	21.2	+5.5	+10.7
IOWA	1,152	201	17.4	1,539	273	17.7	1,754	326	18.6	+13.9	+19.6
KANSAS	851	123	14.5	1,273	197	15.5	1,419	211	14.9	+11.4	+7.2
KENTUCKY	998	242	24.2	1,308	334	25.5	1,974	463	23.4	+50.8	+38.2
LOUISIANA	1,239	46	3.7	1,907	49	2.5	2,471	125	5.0	+29.5	+154.5
MAINE	379	80	21.2	527	113	21.5	647	120	18.6	+22.5	+6.2
MARYLAND	1,401	214	15.2	2,055	213	10.3	2,376	347	14.6	+15.6	+62.8
MASSACHUSETTS	3,253	763	23.4	4,033	1,026	25.4	4,799	1,202	25.0	+18.9	+17.0
MICHIGAN	5,209	1,128	21.6	6,728	1,482	22.0	7,496	1,638	21.8	+11.4	+10.5
MINNESOTA	1,632	454	27.8	2,044	517	25.3	2,461	651	26.4	+20.3	+25.7
MISSISSIPPI	752	113	15.1	992	94	9.5	1,364	134	9.8	+37.4	+42.3
MISSOURI	2,260	401	17.7	3,254	727	22.3	3,450	777	22.5	+6.0	+6.9
MONTANA	256	7	2.7	417	10	2.4	455	14	3.1	+9.2	+40.6
NEBRASKA	660	132	19.9	1,010	176	17.5	1,058	249	23.5	+4.7	+40.8
NEVADA	398	0	0.0	674	1	0.2	805	20	2.5	+19.4	+961.5
NEW HAMPSHIRE	305	75	24.6	487	113	23.1	802	181	22.5	+64.5	+60.1
NEW JERSEY	4,258	812	19.0	4,909	485	9.8	5,351	1,285	24..	+9.0	+164.8
NEW MEXICO	345	24	7.2	453	24	5.3	697	31	4.4	+53.7	+27.9
NEW YORK	9,124	845	9.2	11,656	1,236	10.6	14,072	1,552	11.0	+20.7	+25.5
NORTH CAROLINA	1,719	554	32.2	2,608	749	28.7	3,365	1,031	30.6	+29.0	+37.6
NORTH DAKOTA	141	11	8.2	166	12	7.3	214	19	8.9	+28.6	+56.8
OHIO	5,626	1,014	18.0	7,051	1,374	19.4	8,260	1,735	21.0	+17.1	+26.2
OKLAHOMA	746	46	6.2	1,221	62	5.0	1,524	130	8.5	+24.7	+110.2
OREGON	1,195	249	20.8	1,691	304	17.9	1,914	290	15.1	+13.2	-4.3
PENNSYLVANIA	5,531	760	13.7	6,662	899	13.5	8,212	1,062	12.9	+23.2	+18.1
RHODE ISLAND	484	156	32.3	648	181	27.9	824	256	31.1	+27.1	+41.6
SOUTH CAROLINA	859	252	29.4	1,351	275	20.4	1,779	488	27.4	+31.7	+76.9
SOUTH DAKOTA	202	28	13.9	272	30	11.3	317	37	11.8	+16.4	+20.8
TENNESSEE	1,799	484	26.9	2,566	664	25.8	3,401	938	27.5	+32.5	+41.1
TEXAS	6,287	655	10.4	7,561	636	8.4	10,072	842	8.3	+33.2	+32.2
UTAH	812	98	12.1	1,053	127	12.1	1,322	180	13.6	+25.5	+41.3
VERMONT	180	16	8.9	230	14	6.2	271	28	10.4	+17.8	+95.6
VIRGINIA	1,697	279	16.4	2,453	435	17.7	3,160	572	18.0	+28.8	+31.2
WASHINGTON	1,610	194	12.0	2,219	262	11.8	2,861	381	13.3	+28.9	+45.3
WEST VIRGINIA	388	61	15.7	640	56	8.7	1,049	122	11.7	+63.9	+119.0
WISCONSIN	2,320	580	25.0	3,471	1,003	28.8	3,876	1,076	27.7	+11.6	+7.3
WYOMING	174	1	0.7	193	0	0.1	316	10	3.4	+63.1	+2759.9
AMERICAN SAMOA	1	0	0.0	4	0	0.0	23	10	46.7	425.4	+0.0
GUAM	34	0	0.0	99	0	0.0	100	0	0.0	+1.1	+0.0
N. MARIANAS	2	0	0.0	4	0	0.0	20	0	0.0	+318.3	+0.0
PUERTO RICO	517	48	9.4	412	48	11.8	1,306	241	18.5	+217.1	+396.3
PAC. TR. TERR.	1	0	0.0	12	0	0.6	37	0	0.1	213.1	+0.0
VIRGIN ISLANDS	24	0	0.0	36	0	0.0	51	0	0.0	+40.1	+0.0
U.S. TOTALS	101,794	16,419	16.1	133,503	21,413	16.0	161,778	26,853	16.5	+21.1	+25.4

NOTES: 1. FLOWS IN CUBIC METERS X 1000 2. SUM OF ENTRIES MAY NOT EQUAL TOTALS DUE TO ROUND-OFFS

TABLE 8

PROJECTED INDUSTRIAL FLOW TO MUNICIPAL TREATMENT PLANTS BY NUMBER, FLOW, AND PERCENT OF TOTAL FLOW

Table 8 summarizes the industrial flows expected at municipal plants in the year 2000. A summary is provided for each State and U.S. Territory. National totals are summarized at the bottom of the table. Table 8 is an extension of the Projected Design portion of Table 7.

In the second column the total number of projected treatment plants in each State is reported. Column three represents the total wastewater treatment capacity of the plants in thousand cubic meters per day. The projected design flow for each plant was used to calculate the total treatment capacity value.

Subsequent columns provide a breakdown of the plants that will be receiving industrial flows into five flow ranges. The ranges specified in the column headings are reported in thousand cubic meters per day and, in parentheses under the headings, in million gallons per day.

Reported for each flow range are the number of plants in the range that will be receiving industrial flows and the total amount of industrial flow expected. Also reported is the percentage of the total State treatment capacity that is accounted for by the industrial flow.

All flows in the columns are given in thousand cubic meters per day.

The data indicate that the largest percentage of industrial flows will be treated by plants in the 1 to 50 mgd ranges.

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TABLE 8

1982 NEEDS SURVEY

PROJECTED INDUSTRIAL FLOW TO MUNICIPAL TREATMENT PLANTS BY NUMBER, FLOW, AND PERCENT OF TOTAL FLOW

CUBIC METERS/DAY X 1000 (MILLION GALLONS PER DAY)			0-.40 (0-.105)			.401-4.0 (.106-1.05)			4.001-40 (1.06-10.5)			40.001-190 (10.57-50.2)			190+ (50.2+)		
STATE	NUMBER AND FLOW OF TREATMENT FACILITIES		NUMBER OF PLANTS	TOTAL INDUS FLOW	% OF TOTAL FLOW	NUMBER OF PLANTS	TOTAL INDUS FLOW	% OF TOTAL FLOW	NUMBER OF PLANTS	TOTAL INDUS FLOW	% OF TOTAL FLOW	NUMBER OF PLANTS	TOTAL INDUS FLOW	% OF TOTAL FLOW	NUMBER OF PLANTS	TOTAL INDUS FLOW	% OF TOTAL FLOW
ALABAMA	342	3,079	46	1	0.03	72	12	0.40	49	183	5.94	10	119	3.89	1	56	1.84
ALASKA	126	369	0	0	0.00	0	0	0.00	4	1	0.43	1	17	4.71	0	0	0.00
ARIZONA	170	1,539	1	0	0.00	0	0	0.00	3	13	0.85	2	51	3.34	0	0	0.00
ARKANSAS	404	1,215	1	0	0.00	10	11	0.93	31	122	10.04	6	39	3.26	0	0	0.00
CALIF.	917	13,412	2	0	0.00	37	17	0.13	90	331	2.47	55	507	3.78	14	1,434	10.70
COLORADO	291	2,030	0	0	0.00	9	3	0.19	17	44	2.16	4	20	1.00	1	170	8.35
CONN.	103	2,064	1	0	0.00	8	3	0.17	46	143	6.95	11	215	10.44	1	37	1.83
DELAWARE	22	586	1	0	0.00	3	6	1.03	1	0	0.06	1	9	1.54	1	145	24.76
WASH. D.C.	1	1,169	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
FLORIDA	319	6,955	15	0	0.00	74	11	0.15	28	59	0.85	11	156	2.24	3	170	2.44
GEORGIA	428	3,717	28	1	0.02	84	22	0.61	60	220	5.92	16	455	12.24	1	24	0.65
HAWAII	44	679	0	0	0.00	1	0	0.06	3	5	0.85	0	0	0.00	1	47	6.95
IDAHO	205	706	0	0	0.00	8	3	0.46	8	19	2.82	6	54	7.73	0	0	0.00
ILLINOIS	857	12,335	0	0	0.00	61	16	0.14	95	241	1.95	25	550	4.46	5	1,386	11.24
INDIANA	531	4,157	10	0	0.01	41	10	0.23	56	188	4.54	19	405	9.76	4	276	6.64
IOWA	813	1,754	7	0	0.01	22	7	0.42	27	110	6.31	8	208	11.87	0	0	0.00
KANSAS	563	1,419	1	0	0.00	21	4	0.31	25	54	3.85	3	105	7.43	1	46	3.30
KENTUCKY	385	1,974	57	2	0.10	73	11	0.56	40	79	4.03	7	64	3.26	2	305	15.49
LOUISIANA	444	2,471	1	0	0.00	14	3	0.14	11	15	0.61	5	61	2.47	2	45	1.83
MAINE	286	647	4	0	0.05	20	13	2.03	22	71	11.11	4	35	5.43	0	0	0.00
MARYLAND	281	2,376	19	0	0.02	25	4	0.18	16	47	1.99	7	172	7.27	2	121	5.12
MASS.	148	4,799	0	0	0.00	17	12	0.25	50	198	4.13	13	380	7.92	5	610	12.72
MICHIGAN	486	7,496	3	0	0.00	50	21	0.28	40	102	1.36	16	434	5.79	5	1,080	14.40
MINNESOTA	577	2,461	22	1	0.04	80	33	1.32	35	97	3.95	6	157	6.38	1	363	14.76
MISS.	594	1,364	33	1	0.10	64	13	0.95	50	88	6.45	2	15	1.12	1	16	1.22
MISSOURI	632	3,450	13	0	0.01	68	30	0.89	46	125	3.63	9	193	5.59	3	427	12.39
MONTANA	181	455	0	0	0.00	3	0	0.09	7	8	1.93	2	4	1.07	0	0	0.00
NEBRASKA	465	1,058	3	0	0.00	19	6	0.57	17	57	5.39	3	113	10.76	1	71	6.79
NEVADA	71	805	0	0	0.00	0	0	0.00	2	1	0.24	0	0	0.00	1	18	2.24
NEW HAMP.	142	802	1	0	0.00	16	6	0.83	25	73	9.21	3	54	6.77	1	46	5.73
NEW JERSEY	154	5,351	0	0	0.00	12	2	0.05	57	155	2.89	17	268	5.01	5	859	16.05
NEW MEXICO	168	697	0	0	0.00	3	0	0.10	7	13	1.90	0	0	0.00	1	17	2.46
NEW YORK	864	14,072	13	0	0.00	125	31	0.22	93	284	2.02	23	422	3.00	15	813	5.77
N CAROLINA	632	3,365	45	1	0.03	118	35	1.05	89	487	14.47	19	506	15.05	0	0	0.00
N DAKOTA	295	214	1	0	0.01	2	0	0.12	8	18	8.41	0	0	0.00	0	0	0.00
OHIO	798	8,260	6	0	0.00	39	11	0.14	88	291	3.52	26	500	6.05	8	931	11.27
OKLAHOMA	584	1,524	1	0	0.00	16	12	0.80	16	40	2.64	3	39	2.59	1	38	2.53
OREGON	231	1,914	1	0	0.00	5	1	0.05	18	41	2.17	4	171	8.95	1	75	3.95
PENN.	1,241	8,212	48	2	0.02	175	29	0.36	119	290	3.53	11	195	2.37	6	545	6.63
RHODE IS	25	826	0	0	0.00	1	0	0.04	9	40	4.84	4	102	12.39	1	113	13.77
S CAROLINA	285	1,779	33	1	[illegible]	87	25	1.41	62	271	14.36	1	170	9.57	0	0	0.00
S DAKOTA	277	317	2	0	[illegible]	9	1	[illegible]	[illegible]	17	[illegible]	1	22	6.97	0	0	0.00
TENNESSEE	[illegible]	3,401	20	0	[illegible]	70	[illegible]	[illegible]	41	127	3.73	1	[illegible]	[illegible]	5	657	[illegible]
TEXAS	2,221	10,072	3	0	0.00	54	17	0.17	85	164	1.63	26	250	2.48	7	610	6.07
UTAH	178	1,322	22	0	0.06	20	4	0.30	5	11	0.86	5	68	5.15	1	96	7.26
VERMONT	102	271	2	0	0.07	14	4	1.72	12	23	8.50	0	0	0.00	0	0	0.00
VIRGINIA	307	3,160	16	0	0.01	51	13	0.42	28	64	2.04	18	429	13.57	2	64	2.03
WASHINGTON	337	2,861	1	0	0.00	10	8	0.28	26	80	2.79	6	76	2.65	3	219	7.66
W VIRGINIA	499	1,049	44	1	0.15	167	22	2.09	28	27	2.64	4	71	6.81	0	0	0.00
WISCONSIN	623	3,874	31	1	0.04	145	51	1.32	62	181	4.67	14	362	9.33	3	480	12.40
WYOMING	112	316	1	0	0.04	1	0	0.16	4	2	0.63	1	8	2.57	0	0	0.00
AMER SAMOA	1	23	0	0	0.00	0	0	0.00	1	10	46.77	0	0	0.00	0	0	0.00
GUAM	6	108	5	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
N MARIANAS	3	20	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
PUER. RICO	31	1,306	0	0	0.00	6	1	0.11	14	32	2.49	7	190	14.57	1	17	1.32
PAC TR TTR	31	37	0	0	0.00	0	0	0.00	1	0	0.19	0	0	0.00	0	0	0.00
VIRGIN IS	3	51	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00
US TOTAL	21,027	161,778	574	24	0.01	2,062	561	0.35	1,770	5,402	3.33	440	8,606	5.31	116	12,238	7.56

TABLE 9

PERCENT OF FLOW AT ALL TREATMENT LEVELS
(EXISTING AND PLANNED)
NATIONAL SUMMARY

Table 9 summarizes the degree of treatment received by all wastewater collected in the U.S. at present (1982) and the degree of treatment projected to be received in 2000.

Explanations of the categories and definitions of terms follow:

Existing Facilities: Pertains to treatment plants that were operational in 1982. New treatment plants under construction in 1982 and plants planned to be constructed by 2000 are not included in this category.

Actual 1982 Flow: Compiled from the actual average daily flow received at a treatment plant during the most recent 12 month period for which information was available.

Present Design: Refers to the average daily flow that a treatment plant is currently (1982) designed to accommodate.

Projected Design: Refers to the average daily flow that a treatment plant will be designed to accommodate in the year 2000.

Planned Facilities: Treatment plants that were not operational in 1982 but are expected to be operational by the year 2000. Included are new treatment plants that were under construction in 1982.

All Facilities (2000): Includes all treatment plants that will be operational in 2000. This includes facilities presently on line that will remain operational through 2000, new facilities under construction in 1982, and new facilities planned to be built by 2000. Excluded are facilities that are presently on line but are to be taken out of service by 2000.

All flows are reported in thousand cubic meters per day.

Definitions of the levels of treatment (no discharge, primary, secondary, etc.) are given in subsequent tables that summarize information for each level of treatment.

Communities that discharge untreated or raw sewage are not included in this summary.

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TABLE 9

1982 NEEDS SURVEY

PERCENT OF FLOW AT ALL TREATMENT LEVELS

(EXISTING AND PLANNED)

NATIONAL SUMMARY

EXISTING FACILITIES

		NO DISCHARGE	PRIMARY	ADVANCED PRIMARY	SECONDARY	ADVANCED SECONDARY	AWT TERTIARY	TOTAL
FACILITIES:	COUNT	1,600	1,036	2,083	7,946	2,529	231	15,425
	% OF TOTAL	10.4	6.7	13.5	51.5	16.3	1.4	
ACTUAL 1982 FLOW:	CUBIC METERS/1000	1,858	9,364	10,696	41,671	35,494	2,705	101,794
	MGD	491	2,474	2,825	11,008	9,376	714	26,891
	% OF TOTAL	1.8	9.2	10.5	40.9	34.8	2.6	
PRESENT DESIGN:	CUBIC METERS/1000	2,873	11,537	12,839	54,100	47,544	4,599	133,495
	MGD	759	3,047	3,391	14,291	12,559	1,215	35,265
	% OF TOTAL	2.1	8.6	9.6	40.5	35.6	3.4	
PROJECTED DESIGN:	CUBIC METERS/1000	4,972	1,042	4,709	58,555	69,453	10,528	149,260
	MGD	1,313	275	1,244	15,468	18,347	2,781	39,430
	% OF TOTAL	3.3	0.6	3.1	39.2	46.5	7.0	

PLANNED FACILITIES

		NO DISCHARGE	PRIMARY	ADVANCED PRIMARY	SECONDARY	ADVANCED SECONDARY	AWT TERTIARY	TOTAL
FACILITIES:	COUNT	870	0	0	4,240	1,808	157	7,075
	% OF TOTAL	12.2	0.0	0.0	59.9	25.5	2.2	
PROJECTED DESIGN:	CUBIC METERS/1000	860	0	0	7,628	3,562	530	12,581
	MGD	227	0	0	2,015	941	140	3,323
	% OF TOTAL	6.8	0.0	0.0	60.6	28.3	4.2	

ALL FACILITIES (2000)

		NO DISCHARGE	PRIMARY	ADVANCED PRIMARY	SECONDARY	ADVANCED SECONDARY	AWT TERTIARY	TOTAL
FACILITIES:	COUNT	2,736	3	9	11,748	5,845	670	21,011
	% OF TOTAL	13.0	0.0	0.0	55.9	27.8	3.1	
PROJECTED DESIGN:	CUBIC METERS/1000	5,832	834	4,709	66,148	73,015	11,063	161,603
	MGD	1,540	220	1,244	17,474	19,288	2,922	42,691
	% OF TOTAL	3.6	0.5	2.9	40.9	45.1	6.8	

TABLE 10

PLANT LOADINGS, REMOVAL EFFICIENCIES, AND DISCHARGE RATES FOR FACILITIES EXISTING IN 1982

Table 10 is the first of a number of related tables concerning plant loadings, removal efficiencies, and discharge rates for facilities with various levels of treatment. Table 10 gives an estimate of the overall average daily pollutant load received by all treatment plants and provides an estimate of the amount of pollutants in the effluent. A total is shown for each State and U.S. Territory. A national total is provided at the bottom of the table.

Quantities of pollutant in the influent and effluent are estimated for BOD_5 and Solids. Quantities are given in metric tons per day. The quantities are calculated using the average daily flow and the average daily BOD_5 and Solids influent and effluent concentrations, along with appropriate conversion factors. The average values were compiled from the most recent 12 month period for which information was available. Average Statewide removal efficiencies for BOD_5 and Solids are also shown. The major source of flow and concentration information for this series of tables was the self-monitoring reports that are submitted by every facility with an NPDES permit.

Plants With Removal Capability are facilities with a specific requirement to remove the nutrient listed. For example, some phosphorus is removed in all treatment plants. However, only plants specifically designed to remove phosphorus are reported in this category. Reported for each nutrient are the total number of plants with this removal capability and the total average daily flow received by these plants. Also given is the percentage of the total State flow these plants represent. All flows are reported in thousand cubic meters per day.

Total Flow is the sum of the actual average daily flow treated by all facilities within the State regardless of the degree of treatment.

Excluded from this summary are facilities with no discharge to surface waters and communities discharging raw sewage. For this reason, the total flow listed on this table does not match the total actual average daily flows listed on Tables 6 and 7.

Some States may show influent and/or effluent values of BOD_5 or Solids equal to zero, but still have a percent removal calculated. This is due to the influent and/or effluent value being less than 0.5 metric tons per day in which case the value is rounded to zero.

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TABLE 10

1982 NEEDS SURVEY

PLANT LOADINGS, REMOVAL EFFICIENCIES AND DISCHARGE RATES FOR FACILITIES EXISTING IN 1982
(METRIC TONS PER DAY)

		******** REMOVAL EFFICIENCIES ********						************** PLANTS WITH REMOVAL CAPABILITY **************								
		****** BOD5			********** SOLIDS *****			*** PHOSPHORUS ***			** NH3 NITROGEN **			**** TOTAL N *****		
STATE	ACTUAL FLOW	INF.	EFF.	% REM.	INF.	EFF.	% REM.	# PLANTS	FLOW	% TOT. FLOW	# PLANTS	FLOW	% TOT. FLOW	# PLANTS	FLOW	% TOT. FLOW
ALABAMA	1,334	215	27	87.4	220	39	82.2	0	0	0.0	15	326	24.4	0	0	0.0
ALASKA	159	24	13	44.4	30	12	60.9	0	0	0.0	0	0	0.0	0	0	0.0
ARIZONA	761	150	19	86.8	163	20	87.7	0	0	0.0	0	0	0.0	0	0	0.0
ARKANSAS	671	165	22	86.6	158	44	71.9	0	0	0.0	0	0	0.0	0	0	0.0
CALIFORNIA	8,206	2,372	663	72.0	2,661	526	80.2	10	491	5.9	12	786	9.5	7	235	2.8
COLORADO	1,260	283	26	90.5	290	26	90.8	6	8	0.6	7	31	2.5	1	2	0.1
CONNECTICUT	1,316	200	37	81.0	220	51	76.4	4	30	2.3	1	0	0.0	0	0	0.0
DELAWARE	322	57	8	84.4	62	17	71.9	1	1	0.4	1	3	1.1	0	0	0.0
DIST. OF COLUM.	1,169	174	2	98.6	180	10	94.4	1	1,169	100.0	1	1,169	100.0	0	0	0.0
FLORIDA	4,185	727	64	91.1	774	87	88.6	19	424	10.1	12	156	3.7	7	233	5.5
GEORGIA	1,995	394	56	85.7	370	87	76.4	10	60	3.0	22	181	9.0	0	0	0.0
HAWAII	394	62	33	46.5	60	20	66.3	0	0	0.0	0	0	0.0	0	0	0.0
IDAHO	334	85	7	90.9	83	8	89.7	0	0	0.0	1	4	1.1	0	0	0.0
ILLINOIS	8,024	1,141	94	91.6	1,484	101	93.1	30	252	3.1	42	4,902	61.0	1	0	0.0
INDIANA	3,618	617	56	90.8	742	68	90.8	35	1,123	31.0	15	1,057	29.2	0	0	0.0
IOWA	1,151	402	67	83.1	367	65	82.0	0	0	0.0	15	60	5.2	0	0	0.0
KANSAS	821	198	50	74.5	187	35	81.3	0	0	0.0	0	0	0.0	0	0	0.0
KENTUCKY	998	163	44	72.7	194	40	79.4	0	0	0.0	43	183	18.3	0	0	0.0
LOUISIANA	1,237	244	41	82.9	255	52	79.6	0	0	0.0	1	5	0.4	1	5	0.4
MAINE	378	85	16	80.1	99	22	77.6	1	0	0.1	0	0	0.0	0	0	0.0
MARYLAND	1,401	279	71	74.5	295	54	81.4	8	764	54.5	5	68	4.8	4	123	8.7
MASSACHUSETTS	3,253	530	269	49.2	585	221	62.2	7	65	2.0	7	111	3.4	2	24	0.7
MICHIGAN	5,173	1,375	103	92.4	2,398	136	94.3	122	4,607	89.0	18	560	10.8	1	15	0.2
MINNESOTA	1,630	411	47	88.5	464	48	89.6	21	192	11.8	3	27	1.6	0	0	0.0
MISSISSIPPI	752	147	19	86.5	161	31	80.4	1	0	0.0	9	25	3.3	0	0	0.0
MISSOURI	2,257	481	185	61.5	588	153	73.8	0	0	0.0	1	96	4.2	0	0	0.0
MONTANA	248	44	8	81.7	37	7	79.1	0	0	0.0	0	0	0.0	0	0	0.0
NEBRASKA	634	174	84	51.3	182	51	71.7	0	0	0.0	0	0	0.0	0	0	0.0
NEVADA	386	77	7	90.8	83	6	92.5	2	242	62.7	1	90	23.3	0	0	0.0
NEW HAMPSHIRE	303	66	21	67.7	63	14	77.3	1	0	0.1	1	0	0.1	0	0	0.0
NEW JERSEY	4,242	1,170	520	55.5	1,194	447	62.5	5	43	1.0	5	73	1.7	1	28	0.6
NEW MEXICO	297	60	10	82.1	64	10	84.5	1	2	0.9	0	0	0.0	0	0	0.0
NEW YORK	9,122	1,244	311	74.9	1,257	305	75.6	29	765	8.3	21	124	1.3	0	111	1.2
NORTH CAROLINA	1,718	379	36	90.3	361	48	86.5	2	3	0.3	42	389	22.6	1	0	0.0
NORTH DAKOTA	139	32	2	91.8	30	4	86.1	0	0	0.0	0	0	0.0	0	0	0.0
OHIO	5,624	1,056	225	78.6	1,442	220	84.7	58	1,097	19.5	90	653	11.6	0	0	0.0
OKLAHOMA	719	149	19	86.7	150	23	84.0	4	66	9.2	5	70	9.7	0	0	0.0
OREGON	1,177	224	21	90.4	242	27	88.7	2	104	8.8	1	30	2.6	0	0	0.0
PENNSYLVANIA	5,530	970	195	79.8	1.159	248	78.5	87	627	11.3	127	541	9.7	5	31	0.5
RHODE ISLAND	484	72	19	73.4	72	25	64.8	1	3	0.6	0	0	0.0	0	0	0.0
SOUTH CAROLINA	855	230	53	76.9	175	39	77.8	1	4	0.5	15	144	16.8	0	0	0.0
SOUTH DAKOTA	196	32	4	87.6	47	6	85.8	0	0	0.0	2	10	5.1	0	0	0.0
TENNESSEE	1,799	533	79	85.0	595	105	82.2	0	0	0.0	36	545	30.2	0	0	0.0
TEXAS	5,939	1,331	122	90.7	1,302	192	86.0	16	71	1.2	54	213	3.5	0	0	0.0
UTAH	781	115	15	86.7	118	16	86.0	0	0	0.0	0	0	0.0	0	0	0.0
VERMONT	179	35	10	71.5	38	7	76.6	6	4	2.4	0	0	0.0	0	0	0.0
VIRGINIA	1,697	333	45	86.3	320	37	88.1	11	342	20.1	6	232	13.6	3	50	2.9
WASHINGTON	1.587	319	115	63.8	336	85	74.5	1	122	7.6	2	1	0.1	1	0	0.0
WEST VIRGINIA	388	90	24	72.8	86	17	80.0	2	7	1.8	5	19	5.0	4	28	7.3
WISCONSIN	2,293	572	46	91.9	550	41	92.4	61	1,558	67.9	42	135	5.8	0	0	0.0
WYOMING	171	33	8	73.9	34	9	73.0	0	0	0.0	0	0	0.0	0	0	0.0
AMERICAN SAMOA	1	0	0	3.1	0	0	4.7	0	0	0.0	0	0	0.0	0	0	0.0
GUAM	33	7	7	4.3	7	7	4.5	0	0	0.0	0	0	0.0	0	0	0.0
N. MARIANAS	2	0	0	68.7	0	0	41.6	0	0	0.0	0	0	0.0	0	0	0.0
PUERTO RICO	517	135	53	60.2	116	32	72.0	0	0	0.0	0	0	0.0	0	0	0.0
PAC. TR. TERR.	1	0	0	82.3	0	0	80.5	0	0	0.0	0	0	0.0	0	0	0.0
VIRGIN ISLANDS	24	4	3	35.5	5	2	54.2	0	0	0.0	0	0	0.0	0	0	0.0
U.S. TOTALS	99,935	20,321	4,129	79.8	23,267	4,027	82.6	586	14,262	14.2	686	13,038	13.0	47	892	0.8

NOTES: 1. FLOWS IN CUBIC METERS X 1000 2. METRIC TONS X .9872 = SHORT TONS

3. SUM OF ENTRIES MAY NOT EQUAL TOTALS DUE TO ROUND-OFFS

4. FACILITIES WITH ZERO DISCHARGE OR RAW DISCHARGE ARE NOT INCLUDED

TABLE 11

PLANT LOADINGS, REMOVAL EFFICIENCIES, AND DISCHARGE RATES FOR FACILITIES PROJECTED FOR 2000

Table 11 is a companion table to the summary provided on Table 10. This table summarizes the year 2000 situation with regard to flows, pollutant loadings, and removal efficiencies. All flows and quantities are estimated using the projected design flow and the projected level of treatment for treatment plants expected to be operational in the year 2000.

Quantities of pollutant in the influent and effluent are estimated for BOD_5 and Solids. Quantities are given in metric tons per day. The quantities were calculated using the average daily flow and the average daily influent and effluent BOD_5 and Solids concentrations, along with appropriate conversion factors. The average values used for this summary represent the projected year 2000 situation. Average Statewide removal efficiencies for BOD_5 and Solids projected for the year 2000 are also shown.

Plants with Removal Capability are facilities with a specific requirement to remove the nutrient listed. For example, some phosphorus is removed in all treatment plants. However, only plants specifically designed to remove phosphorus are reported in this category. Reported for each nutrient are the total number of plants with this removal capability and the total average daily flow to be received by these plants in the year 2000. Also given is the percentage of the total State flow these plants will represent. All flows are reported in thousand cubic meters per day.

Total Flow is the sum of the actual average daily flow treated by all facilities within the State regardless of the level of treatment.

Excluded from this summary are facilities with no discharge to surface waters and communities discharging raw sewage. For this reason, the total flow listed on this table does not match the total projected design flows listed on Tables 6 and 7.

Some States may show influent and/or effluent values of BOD_5 or Solids equal to zero, but still have a percent removal calculated. This is due to the influent and/or effluent value being less than 0.5 metric tons per day in which case the value is rounded to zero.

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TABLE 11

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PLANT LOADINGS, REMOVAL EFFICIENCIES AND DISCHARGE RATES FOR FACILITIES PROJECTED FOR 2000
(METRIC TONS PER DAY)

		REMOVAL EFFICIENCIES						PLANTS WITH REMOVAL CAPABILITY								
		BOD5			SOLIDS			PHOSPHORUS			NH3 NITROGEN			TOTAL N		
STATE	PROJECTED FLOW	INF.	EFF.	% REM.	INF.	EFF.	% REM.	# PLANTS	FLOW	% TOT. FLOW	# PLANTS	FLOW	% TOT. FLOW	# PLANTS	FLOW	% TOT. FLOW
ALABAMA	3,079	643	75	88.2	651	92	85.8	0	0	0.0	184	991	32.1	0	0	0.0
ALASKA	369	63	25	60.8	73	22	69.7	0	0	0.0	0	0	0.0	0	0	0.0
ARIZONA	1,282	291	38	86.9	284	39	86.0	2	9	0.7	0	0	0.0	0	0	0.0
ARKANSAS	1,200	288	24	91.6	276	28	89.6	0	0	0.0	0	0	0.0	0	0	0.0
CALIFORNIA	11,678	3,405	657	80.6	3,545	547	84.5	9	1,062	9.0	14	1,743	14.9	6	882	7.5
COLORADO	1,952	462	49	89.3	468	49	89.3	6	41	2.1	15	336	17.2	1	5	0.2
CONNECTICUT	2,056	400	54	86.4	407	52	87.1	15	334	16.2	11	255	12.4	1	22	1.1
DELAWARE	584	136	9	93.3	134	11	91.2	3	60	10.4	2	15	2.5	0	0	0.0
DIST. OF COLUM.	1,169	280	5	97.9	288	8	97.0	1	1,169	100.0	1	1,169	100.0	0	0	0.0
FLORIDA	5,194	1,089	117	89.2	1,151	121	89.4	26	1,081	20.8	184	790	15.2	9	201	3.8
GEORGIA	3,471	733	68	90.6	702	97	86.1	23	402	11.5	133	2,043	58.8	1	7	0.2
HAWAII	641	171	62	63.3	135	52	61.5	0	0	0.0	0	0	0.0	0	0	0.0
IDAHO	612	159	15	90.2	164	17	89.6	6	45	7.3	7	106	17.3	2	11	1.8
ILLINOIS	12,329	1,981	142	92.7	2,815	198	92.9	48	606	4.9	107	9,675	78.4	1	1	0.0
INDIANA	4,155	834	63	92.3	940	64	93.1	85	1,903	45.7	60	2,309	55.5	0	0	0.0
IOWA	1,747	563	42	92.4	481	54	88.6	0	0	0.0	97	628	35.9	0	0	0.0
KANSAS	1,343	330	38	88.3	356	42	88.1	0	0	0.0	0	0	0.0	0	0	0.0
KENTUCKY	1,973	416	46	88.9	454	56	87.9	1	0	0.0	232	728	36.8	1	1	0.0
LOUISIANA	2,436	549	67	87.7	557	74	86.5	0	0	0.0	1	7	0.3	1	7	0.3
MAINE	635	155	19	87.6	174	21	87.8	12	27	4.2	0	0	0.0	0	0	0.0
MARYLAND	2,375	527	55	89.4	485	55	88.5	22	1,795	75.6	14	331	13.9	3	357	15.0
MASSACHUSETTS	4,782	971	126	86.9	1,080	161	85.0	28	710	14.8	21	480	10.0	2	38	0.8
MICHIGAN	7,409	1,420	168	88.1	1,961	182	90.7	109	7,174	96.8	43	1,257	16.9	2	22	0.3
MINNESOTA	2,435	668	39	94.0	709	68	90.3	57	363	14.9	26	1,412	57.9	1	2	0.0
MISSISSIPPI	1,311	271	26	90.1	267	39	85.0	2	1	0.0	202	589	44.9	0	0	0.0
MISSOURI	3,445	797	99	87.5	813	106	86.1	0	0	0.0	1	113	3.2	0	0	0.0
MONTANA	439	80	13	83.7	84	16	79.9	0	0	0.0	1	10	2.3	0	0	0.0
NEBRASKA	996	355	29	91.5	353	31	90.9	0	0	0.0	0	0	0.0	0	0	0.0
NEVADA	716	111	11	89.7	109	8	91.9	2	492	68.6	1	151	21.1	1	0	0.0
NEW HAMPSHIRE	774	231	21	90.5	204	21	89.3	6	59	7.6	9	73	9.4	0	0	0.0
NEW JERSEY	5,317	1,558	133	91.4	1,593	134	91.5	18	217	4.0	44	1,034	19.4	5	139	2.6
NEW MEXICO	592	125	17	86.2	127	17	85.9	3	11	1.9	1	0	0.0	0	0	0.0
NEW YORK	14,051	2,637	374	85.7	2,851	382	86.5	76	2,969	21.1	121	887	6.3	25	380	2.1
NORTH CAROLINA	3,350	872	57	93.4	759	97	87.2	18	47	1.4	264	1,971	58.8	1	0	0.0
NORTH DAKOTA	198	51	4	90.2	50	5	88.3	0	0	0.0	0	0	0.0	0	0	0.0
OHIO	8,245	1,759	125	92.8	1,962	140	92.8	185	5,502	66.7	368	4,545	55.1	2	1	0.0
OKLAHOMA	1,420	323	27	91.3	342	41	87.9	4	134	9.4	15	361	25.4	0	0	0.0
OREGON	1,851	461	31	93.1	449	35	92.0	2	132	7.1	1	36	1.9	0	0	0.0
PENNSYLVANIA	8,206	1,723	181	89.4	1,923	212	88.9	220	1,467	17.8	367	1,880	22.9	17	164	2.0
RHODE ISLAND	824	209	21	89.5	187	22	87.9	2	6	0.7	3	164	19.9	0	0	0.0
SOUTH CAROLINA	1,767	475	45	90.4	384	51	86.7	16	152	8.6	72	471	26.6	0	0	0.0
SOUTH DAKOTA	303	86	6	92.0	83	7	91.0	0	0	0.0	12	167	54.9	0	0	0.0
TENNESSEE	3,377	1,027	73	92.8	880	86	90.1	11	2	0.0	177	2,193	64.9	1	32	0.6
TEXAS	9,636	2,282	142	93.7	2,279	196	91.4	18	124	1.2	65	1,151	11.9	1	2	0.0
UTAH	1,262	244	14	93.0	278	12	95.5	0	0	0.0	2	19	1.5	0	0	0.0
VERMONT	269	56	6	88.8	53	6	88.1	24	97	36.4	14	76	28.5	0	0	0.0
VIRGINIA	3,152	720	61	91.5	716	60	91.5	28	798	25.3	9	477	15.1	8	259	8.2
WASHINGTON	2,814	645	157	75.6	673	134	80.0	2	236	8.3	5	254	9.0	3	237	8.4
WEST VIRGINIA	1,047	234	26	88.7	233	26	88.5	3	13	1.2	25	140	13.3	7	41	3.9
WISCONSIN	3,791	895	102	88.5	954	100	89.4	75	2,647	69.8	102	627	16.5	0	0	0.0
WYOMING	307	66	9	86.0	69	11	83.5	0	0	0.0	4	96	31.3	0	0	0.0
AMERICAN SAMOA	23	7	0	90.9	3	0	80.0	0	0	0.0	0	0	0.0	0	0	0.0
GUAM	94	19	2	85.0	21	2	86.7	0	0	0.0	0	0	0.0	0	0	0.0
N. MARIANAS	20	2	0	85.2	2	0	85.2	0	0	0.0	0	0	0.0	0	0	0.0
PUERTO RICO	1,306	361	38	89.2	325	38	88.0	1	16	1.2	3	18	1.3	0	0	0.0
PAC. TR. TERR.	36	7	1	87.1	7	1	87.1	0	0	0.0	0	0	0.0	0	0	0.0
VIRGIN ISLANDS	51	12	1	87.7	13	1	88.8	0	0	0.0	0	0	0.0	0	0	0.0
U.S. TOTALS	155,915	35,267	3,884	88.9	37,357	4,171	88.8	1,233	31,919	20.4	2,880	41,880	26.8	104	2,734	1.7

NOTES: 1. FLOWS IN CUBIC METERS X 1000 2. METRIC TONS X .9072 = SHORT TONS

3. SUM OF ENTRIES MAY NOT EQUAL TOTALS DUE TO ROUND-OFFS

4. FACILITIES WITH ZERO DISCHARGE OR RAW DISCHARGE ARE NOT INCLUDED

TABLE 12

TREATMENT POPULATIONS
PRESENT, PROJECTED, RESIDENT AND NONRESIDENT

Table 12 summarizes the populations by State for 1980 and 2000 which are now or will be receiving treatment of their wastewaters.

The values listed for the 2000 State ceiling populations were obtained from data provided by the Department of Commerce, Bureau of Economic Analysis (BEA). The population totals listed under the 1980 column for each State and the nation are based on the 1980 population as reported in the April 1981 Report of the Bureau of Census. The year 2000 total is the population expected to be resident in each State as predicted by BEA. The projections were produced by BEA after extensive analysis which included review and comment by State agencies responsible for population projections.

Resident populations (RES) are permanent residents within the service area of the established sewerage authority. Nonresident populations (NONRES) include transients, seasonal workers, commuters, tourists, and other persons who must be served by local systems but do not maintain a permanent residence within the service area.

Persons are included in the Receiving Treatment category if the wastewater they generate is treated at a facility operated by an established sewerage authority. Persons are included in the Not Receiving Treatment category if they reside in the service area of an established sewerage authority but their residence is not connected to a central collection system.

The sum of the populations receiving treatment and not receiving treatment does not equal the State's total population. This is because many rural residents who are counted as a part of the State's total population do not reside in the service area of any established sewerage authority and, therefore, are not included in any Receiving Treatment or Not Receiving Treatment categories.

All levels of treatment are included under Receiving Treatment. Similar summaries are presented on subsequent tables for each specific level of treatment.

The Percent Served values are based upon a comparison between the resident population receiving treatment and the total State population figures provided by BEA.

A similar summary dealing with collection populations is presented on Table 49.

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1982 NEEDS SURVEY

TREATMENT POPULATIONS
PRESENT, PROJECTED, RESIDENT & NONRESIDENT
(IN THOUSANDS)

STATE	**** POPULATION ****		****** RECEIVING TREATMENT ******				*** NOT RECEIVING TREATMENT ***				PERCENT SERVED	
	1980 TOTAL	2000 TOTAL	1980 RES.	2000 RES.	1980 NONRES.	2000 NONRES.	1980 RES.	2000 RES.	1980 NONRES.	200J NONRES.	1980	2000
ALABAMA	3,890	4,140	2,121	3,511	101	233	536	88	13	0	54.5	84.8
*ALASKA	400	694	202	666	3	19	122	27	3	0	50.6	96.1
ARIZONA	2,718	4,357	2,209	4,120	69	181	306	93	11	4	81.3	94.6
ARKANSAS	2,286	2,970	1,275	2,468	33	46	195	33	0	0	55.8	83.1
*CALIFORNIA	23,669	26,786	19,457	26,930	1,079	1,503	1,474	261	43	10	82.2	100.5
COLORADO	2,889	4,371	2,735	4,230	189	570	31	2	0	0	94.7	96.8
*CONNECTICUT	3,108	3,902	1,913	3,028	31	44	1,226	889	9	0	61.6	77.6
*DELAWARE	595	841	490	817	91	415	84	23	35	0	82.4	97.3
*DIST. OF COLUM.	638	694	744	913	1,898	2,223	0	0	0	0	116.6	131.6
FLORIDA	9,740	15,049	5,732	13,098	801	1,695	1,997	366	36	3	58.9	87.0
GEORGIA	5,464	7,053	3,291	5,892	135	221	762	318	4	0	60.2	83.5
HAWAII	965	1,366	597	1,240	87	240	205	0	11	0	61.9	90.8
IDAHO	944	1,183	503	1,066	13	81	121	20	24	4	53.3	90.1
ILLINOIS	11,418	12,350	9,866	12,098	35	47	291	191	0	0	86.4	97.9
INDIANA	5,490	6,059	3,560	4,964	246	485	353	40	65	0	64.9	81.9
IOWA	2,913	3,101	2,099	2,827	77	129	166,	24	20	0	72.1	91.2
KANSAS	2,363	2,642	1,833	2,526	16	21	174	6	0	0	77.6	95.6
KENTUCKY	3,661	4,224	1,748	3,186	60	97	720	257	0	0	47.8	75.4
LOUISIANA	4,204	4,888	2,829	4,841	95	107	688	4	9	0	67.3	99.2
MAINE	1,125	1,222	562	922	83	128	417	226	9	2	50.0	75.5
MARYLAND	4,216	5,583	2,361	4,002	144	460	537	128	130	110	56.0	71.7
*MASSACHUSETTS	5,737	6,736	3,871	5,700	52	201	1,955	957	94	36	67.5	85.6
MICHIGAN	9,258	10,314	6,986	8,900	128	237	1,387	876	41	43	75.5	86.3
MINNESOTA	4,077	4,505	3,002	3,802	25	36	224	129	7	6	73.7	84.4
MISSISSIPPI	2,521	2,740	1,465	2,335	11	27	383	129	2	0	58.1	85.2
MISSOURI	4,917	5,379	3,622	5,307	886	1,209	313	22	9	0	73.7	98.7
MONTANA	787	938	474	709	33	30	33	1	0	0	60.3	75.7
NEBRASKA	1,570	1,734	1,247	1,708	17	26	46	7	0	0	79.5	98.5
NEVADA	799	1,408	730	1,374	92	193	44	4	0	0	91.4	97.6
NEW HAMPSHIRE	921	1,306	393	894	51	190	304	259	65	37	42.8	68.5
NEW JERSEY	7,364	9,022	6,084	8,281	1,025	1,507	1,267	699	367	55	82.6	91.8
NEW MEXICO	1,300	1,781	904	1,522	23	36	132	47	6	2	69.5	85.5
*NEW YORK	17,577	19,683	12,514	17,671	2,385	4,039	5,356	2,260	404	26	71.2	89.8
NORTH CAROLINA	5,874	7,419	2,545	4,576	185	444	1,488	909	103	27	43.3	61.7
NORTH DAKOTA	653	690	441	578	0	1	7	3	0	0	67.5	83.8
OHIO	10,797	12,237	8,482	12,091	57	186	989	119	13	0	78.6	98.8
OKLAHOMA	3,025	3,702	1,858	3,309	2	12	188	37	7	0	61.5	89.4
OREGON	2,633	3,209	1,458	3,059	42	81	344	11	2	0	55.4	95.2
PENNSYLVANIA	11,867	12,854	9,148	12,221	535	1,211	2,318	555	241	21	77.1	95.1
*RHODE ISLAND	947	1,084	628	922	48	71	304	163	0	0	66.3	85.1
SOUTH CAROLINA	3,119	3,700	1,327	2,915	280	519	673	108	55	0	42.6	78.8
SOUTH DAKOTA	690	730	459	668	14	11	17	6	0	0	66.5	91.5
TENNESSEE	4,591	5,573	2,172	4,206	68	145	940	284	1	0	47.3	76.9
TEXAS	14,228	21,000	12,161	20,267	234	530	1,091	12	1	4	85.5	96.5
UTAH	1,461	1,963	1,223	1,957	192	327	79	3	1	0	83.7	99.7
VERMONT	511	607	[illegible]	375	45	74	119	86	16	0	45.6	61.9
VIRGINIA	5,346	6,755	3,377	5,767	305	460	1,122	547	2	0	63.2	85.4
WASHINGTON	4,130	4,889	2,334	4,354	439	746	639	136	28	21	56.5	89.6
*WEST VIRGINIA	1,950	2,101	826	2,072	16	24	952	29	2	0	42.4	98.7
WISCONSIN	4,705	5,553	3,324	4,012	185	195	411	192	28	14	70.7	86.7
*WYOMING	450	404	333	617	18	28	3	0	1	0	74.0	127.6
AMERICAN SAMOA	33	40	1	32	0	1	27	2	0	0	4.2	80.0
GUAM	110	275	71	209	9	3	26	15	0	0	64.5	76.0
N. MARIANAS	17	33	1	31	0	2	17	1	0	0	5.9	94.1
PUERTO RICO	3,197	4,700	1,757	3,242	0	0	1,104	771	0	0	55.0	69.0
*PAC. TR. TERR.	118	183	11	103	0	4	100	79	0	0	9.3	56.0
*VIRGIN ISLANDS	99	116	79	128	3	3	30	7	0	0	80.0	110.6
U.S. TOTALS	230,875	270,888	161,692	250,245	12,638	21,787	55,024	12,590	1,781	475	70.3	89.7

TABLE 13

SEPTIC TANK POPULATION
PRESENT, PROJECTED, RESIDENT AND NONRESIDENT

Table 13 summarizes the populations by State for 1980 and 2000 which are now, or for the year 2000, will continue to be disposing of their wastewaters by means of individual onsite systems, the majority being septic tanks or leach fields. The values listed for the 1980 and 2000 State ceiling populations were obtained from data provided by BEA.

All the populations are listed under the Not Receiving Treatment category only because they are not being served by centralized collection and treatment facilities. None of the populations listed on this table live within the service district of a sewage authority with a central collection and treatment system. Most of the populations are in small communities and do not include the strictly rural populations within the State.

Resident populations (RES) are permanent residents within the boundaries of an incorporated area. Nonresident populations (NONRES) include transients, seasonal workers, commuters, tourists, and other persons who must be served by local systems but do not maintain a permanent residence within the service area.

The Percent Served values are based upon a comparison between the resident population not receiving treatment and the total State population figures provided by BEA.

DECEMBER 31, 1982
TABLE 13

1982 NEEDS SURVEY

SEPTIC TANK POPULATION
PRESENT, PROJECTED, RESIDENT & NONRESIDENT
(IN THOUSANDS)

STATE	==== POPULATION ====		====== RECEIVING TREATMENT ======				=== NOT RECEIVING TREATMENT ===				PERCENT SERVED	
	1980 TOTAL	2000 TOTAL	1980 RES.	2000 RES.	1980 NONRES.	2000 NONRES.	1980 RES.	2000 RES.	1980 NONRES.	2000 NONRES.	1980	2000
ALABAMA	3,890	4,140	0	0	0	0	203	28	2	0	5.2	0.7
ALASKA	400	694	0	0	0	0	36	12	3	0	9.0	1.6
ARIZONA	2,718	4,357	0	0	0	0	144	45	7	4	5.3	1.0
ARKANSAS	2,286	2,970	0	0	0	0	122	27	0	0	5.3	0.9
CALIFORNIA	23,669	26,786	0	0	0	0	423	119	36	18	1.8	0.4
COLORADO	2,889	4,371	0	0	0	0	15	1	0	3	0.5	0.0
CONNECTICUT	3,108	3,902	0	0	0	0	387	314	0	0	12.5	8.1
DELAWARE	595	841	0	0	0	0	9	1	31	0	1.5	0.2
DIST. OF COLUM.	638	694	0	0	0	0	0	0	0	0	0.0	0.0
FLORIDA	9,740	13,049	0	0	0	0	549	18	11	1	5.6	0.1
GEORGIA	5,464	7,053	0	0	0	0	161	70	2	0	3.0	1.0
HAWAII	965	1,366	0	0	0	0	57	0	11	0	5.9	0.0
IDAHO	944	1,183	0	0	0	0	47	3	19	0	5.0	0.3
ILLINOIS	11,418	12,350	0	0	0	0	176	87	0	0	1.5	0.7
INDIANA	5,490	6,089	0	0	0	0	138	16	16	0	2.5	0.3
IOWA	2,913	3,101	0	0	0	0	74	22	28	0	2.5	0.7
KANSAS	2,363	2,642	0	0	0	0	52	6	0	0	2.2	0.3
KENTUCKY	3,661	4,224	0	0	0	0	232	2	0	0	6.3	0.1
LOUISIANA	4,206	4,880	0	0	0	0	436	6	6	0	10.4	0.1
MAINE	1,125	1,222	0	0	0	0	105	12	4	2	9.3	1.0
MARYLAND	4,216	5,503	0	0	0	0	139	53	135	110	3.3	1.0
MASSACHUSETTS	5,737	6,736	0	0	0	0	456	54	30	0	8.0	0.8
MICHIGAN	9,258	10,314	0	0	0	0	583	536	36	30	6.3	5.2
MINNESOTA	4,077	4,505	0	0	0	0	98	59	6	6	2.4	1.3
MISSISSIPPI	2,521	2,740	0	0	0	0	135	6	0	0	5.4	0.2
MISSOURI	4,917	5,379	0	0	0	0	105	21	0	0	2.1	0.4
MONTANA	787	939	0	0	0	0	19	1	0	0	2.5	0.2
NEBRASKA	1,570	1,734	0	0	0	0	9	7	0	0	0.6	0.4
NEVADA	799	1,408	0	0	0	0	31	1	0	0	4.0	0.1
NEW HAMPSHIRE	921	1,306	0	0	0	0	123	13	47	0	13.4	1.1
NEW JERSEY	7,364	9,822	0	0	0	0	577	497	322	48	7.8	5.1
NEW MEXICO	1,300	1,701	0	0	0	0	46	10	6	2	3.6	0.6
NEW YORK	17,577	19,683	0	0	0	0	2,250	1,413	14	21	12.8	7.2
NORTH CAROLINA	5,874	7,419	0	0	0	0	319	14	97	13	5.4	0.2
NORTH DAKOTA	653	690	0	0	0	0	6	3	0	0	1.1	0.4
OHIO	10,797	12,237	0	0	0	0	272	79	2	0	2.5	0.7
OKLAHOMA	3,025	3,702	0	0	0	0	68	18	7	0	2.3	0.5
OREGON	2,633	3,289	0	0	0	0	26	11	1	0	1.0	0.4
PENNSYLVANIA	11,867	12,894	0	0	0	0	1,102	298	238	21	9.3	2.3
RHODE ISLAND	947	1,084	0	0	0	0	37	0	0	0	4.0	0.0
SOUTH CAROLINA	3,119	3,700	0	0	0	0	196	3	81	0	6.3	0.1
SOUTH DAKOTA	690	730	0	0	0	0	14	6	0	0	2.1	0.8
TENNESSEE	4,591	5,573	0	0	0	0	112	4	0	0	2.5	0.1
TEXAS	14,228	21,089	0	0	0	0	508	0	41	0	3.6	0.0
UTAH	1,461	1,963	0	0	0	0	61	3	1	0	4.2	0.2
VERMONT	511	687	0	0	0	0	41	3	7	1	8.1	0.4
VIRGINIA	5,346	6,755	0	0	0	0	762	488	2	0	14.3	7.2
WASHINGTON	4,130	4,859	0	0	0	0	197	14	12	21	4.8	0.3
WEST VIRGINIA	1,950	2,101	0	0	0	0	683	7	2	0	35.1	0.3
WISCONSIN	4,705	5,553	0	0	0	0	192	155	16	14	4.1	2.8
WYOMING	450	484	0	0	0	0	2	0	1	0	0.5	0.2
AMERICAN SAMOA	33	48	0	0	0	0	0	0	0	0	0.0	0.0
GUAM	110	275	0	0	0	0	0	0	0	0	0.0	0.0
N. MARIANAS	17	33	0	0	0	0	9	1	0	0	52.9	4.5
PUERTO RICO	3,197	4,700	0	0	0	0	3	0	0	0	0.2	0.0
PAC. TR. TERR.	116	183	0	0	0	0	56	39	0	0	48.2	21.3
VIRGIN ISLANDS	99	116	0	0	0	0	0	0	0	0	0.0	0.0
U.S. TOTALS	230,875	278,868	0	0	0	0	12,638	4,589	1,271	318	5.5	1.6

TABLE 14

POPULATIONS SERVED BY TREATMENT WITH NO DISCHARGE PRESENT AND PROJECTED, RESIDENT AND NONRESIDENT

Table 14 summarizes the populations by State for 1980 and 2000 which are now or will be receiving treatment of their wastewaters at facilities that do not discharge to surface waters. The majority of the facilities are lagoon systems designed for evaporation and/or infiltration of the total flow. Also included are facilities that dispose of their effluent by recycling, reuse, spray irrigation or other land disposal, or groundwater recharge.

Also summarized for each State and the nation as a whole is the number of no discharge facilities in operation in 1980 and the number expected to be operational in 2000.

The terms total population, resident, nonresident, receiving treatment, not receiving treatment, and percent served are defined in the description accompanying Table 12.

DECEMBER 31, 1982
TABLE 14

1982 NEEDS SURVEY

POPULATIONS SERVED BY TREATMENT WITH NO DISCHARGE
PRESENT AND PROJECTED, RESIDENT AND NONRESIDENT
(POPULATION IN THOUSANDS)

STATE	*** POPULATION ***		**** RECEIVING TREATMENT *****				*** NOT RECEIVING TREATMENT **				** PERCENT *** SERVED		** TREATMENT ** PLANTS	
	1980 TOTAL	2000 TOTAL	1980 RES.	2000 RES.	1980 NONRES	2000 NONRES	1980 RES.	2000 RES.	1980 NONRES	2000 NONRES	1980	2000	1980	2000
ALABAMA	3,890	4,140	0	1	0	0	0	0	0	0	0.0	0.0	0	2
ALASKA	400	694	0	0	0	0	0	0	0	0	0.0	0.0	2	3
ARIZONA	2,718	4,357	191	630	17	140	38	8	0	0	7.0	14.4	89	84
ARKANSAS	2,286	2,970	3	13	0	0	0	0	0	0	0.1	0.4	3	12
CALIFORNIA	23,669	26,786	1,421	3,265	157	422	268	35	7	0	6.0	12.1	294	617
COLORADO	2,889	4,371	45	184	1	4	0	0	0	0	1.5	4.2	31	31
CONNECTICUT	3,108	3,982	1	17	0	0	7	62	0	0	0.0	0.4	4	14
DELAWARE	595	841	0	4	0	7	5	0	0	0	0.0	0.5	0	4
DIST. OF COLUM.	638	694	0	0	0	0	0	0	0	0	0.0	0.0	0	0
FLORIDA	9,746	15,849	483	3,681	39	482	82	196	0	0	4.9	23.9	20	76
GEORGIA	5,464	7,053	90	255	0	0	5	7	0	0	1.6	3.6	5	8
HAWAII	965	1,366	8	76	2	13	3	0	0	0	0.8	5.6	3	7
IDAHO	944	1,183	23	196	4	31	0	5	0	3	2.4	16.6	32	86
ILLINOIS	11,418	12,350	0	14	0	0	0	0	0	0	0.0	0.1	1	10
INDIANA	5,490	6,059	0	2	0	0	0	0	0	0	0.0	0.0	0	2
IOWA	2,913	3,181	2	11	0	1	0	0	0	0	0.0	0.3	3	6
KANSAS	2,363	2,642	82	160	0	0	0	0	0	0	3.4	6.0	170	220
KENTUCKY	3,661	4,224	0	0	0	0	0	0	0	0	0.0	0.0	1	2
LOUISIANA	4,204	4,080	5	78	0	0	0	0	0	0	0.1	1.6	7	18
MAINE	1,125	1,222	2	27	0	2	0	20	0	0	0.1	2.2	2	37
MARYLAND	4,216	5,303	0	2	0	0	0	0	0	0	0.0	0.0	0	7
MASSACHUSETTS	5,737	6,736	0	37	0	25	14	62	0	0	0.0	0.5	1	12
MICHIGAN	9,258	10,314	95	217	0	32	15	31	3	10	1.0	2.1	54	93
MINNESOTA	4,077	4,505	4	54	0	3	0	14	0	0	0.1	1.2	9	55
MISSISSIPPI	2,521	2,740	0	69	0	0	0	2	0	0	0.0	2.5	0	7
MISSOURI	4,917	5,379	3	13	1	1	0	0	0	0	0.0	0.2	5	15
MONTANA	787	938	16	26	1	2	0	0	0	0	2.1	2.8	39	50
NEBRASKA	1,570	1,734	67	142	2	5	1	0	0	0	4.3	8.2	136	192
NEVADA	799	1,408	49	206	2	76	3	3	0	0	6.2	14.6	23	44
NEW HAMPSHIRE	921	1,306	2	47	1	20	2	32	0	10	0.2	3.6	2	38
NEW JERSEY	7,364	9,022	24	62	0	0	31	31	0	0	0.3	0.6	1	2
NEW MEXICO	1,300	1,781	161	252	0	0	9	0	0	0	12.4	14.1	51	86
NEW YORK	17,577	19,683	4	56	0	1	5	20	0	0	0.0	0.2	3	31
NORTH CAROLINA	5,874	7,419	1	29	0	10	1	10	0	0	0.0	0.3	2	19
NORTH DAKOTA	653	690	8	41	0	0	0	0	0	0	1.3	6.0	25	39
OHIO	10,797	12,237	3	28	1	1	0	0	0	0	0.0	0.2	4	4
OKLAHOMA	3,025	3,702	87	275	0	2	7	0	0	0	2.8	7.4	123	226
OREGON	2,633	3,289	35	128	4	5	18	0	0	0	1.3	3.9	34	48
PENNSYLVANIA	11,867	12,854	1	13	0	0	4	1	0	0	0.0	0.1	3	8
RHODE ISLAND	947	1,004	0	0	0	0	0	0	0	0	0.0	0.0	0	0
SOUTH CAROLINA	3,119	3,700	4	15	0	1	0	0	0	0	0.1	0.4	3	9
SOUTH DAKOTA	690	730	13	22	0	5	0	0	0	0	1.9	3.0	38	40
TENNESSEE	4,591	5,373	0	26	0	0	0	1	0	0	0.0	0.4	0	0
TEXAS	14,228	21,000	864	1,055	63	110	26	0	0	0	6.0	5.0	237	226
UTAH	1,461	1,763	78	159	3	18	1	0	0	0	4.8	0.1	37	41
VERMONT	511	607	0	2	3	5	1	1	0	0	0.1	0.3	3	7
VIRGINIA	5,346	6,755	0	20	0	1	0	0	0	0	0.0	0.2	1	7
WASHINGTON	4,130	4,859	25	92	0	3	0	0	0	0	0.6	1.0	33	37
WEST VIRGINIA	1,950	2,101	0	2	0	0	0	0	0	0	0.0	0.1	0	4
WISCONSIN	4,705	5,553	54	186	6	28	2	1	0	0	1.1	2.8	70	117
WYOMING	450	484	6	17	2	2	0	0	0	0	1.5	3.6	19	24
AMERICAN SAMOA	33	40	0	0	0	0	0	0	0	0	0.0	0.0	0	0
GUAM	110	275	3	12	0	0	2	3	0	0	4.7	4.5	3	3
N. MARIANAS	17	33	0	0	0	0	0	0	0	0	0.0	0.0	0	0
PUERTO RICO	3,197	4,700	0	0	0	0	0	0	0	0	0.0	0.0	0	0
PAC. TR. TERR.	110	183	0	4	0	0	0	0	0	0	0.0	2.7	0	2
VIRGIN ISLANDS	99	116	0	0	0	0	0	0	0	0	0.0	0.0	0	0
U.S. TOTAL	230,073	270,882	4,172	11,889	328	1,409	522	550	11	33	1.8	4.2	1,600	2,740

TABLE 15

POPULATIONS SERVED BY RAW DISCHARGE PRESENT AND PROJECTED, RESIDENT AND NONRESIDENT

Table 15 summarizes populations served by sewerage authorities that collect wastewater and discharge the wastewater to the environment as a raw waste. The wastewater is not subjected to any treatment beyond what is considered preliminary treatment. Preliminary treatment would include comminution, screening, grit removal, etc., but not primary sedimentation. For this reason, all the populations are listed under the Not Receiving Treatment category.

Also summarized for each State and the nation as a whole is the number of sewerage authorities utilizing raw discharge as a method of wastewater disposal. In 1982 there were 237 communities discharging raw waste. By the year 2000 all these communities will have built treatment facilities or interceptors to neighboring facilities to eliminate the raw discharge.

DECEMBER 31, 1982
TABLE 15

1982 NEEDS SURVEY

POPULATIONS SERVED BY RAW DISCHARGE
PRESENT AND PROJECTED, RESIDENT AND NONRESIDENT
(POPULATION IN THOUSANDS)

STATE	*** POPULATION *** 1980 TOTAL	2000 TOTAL	**** RECEIVING TREATMENT ***** 1980 RES.	2000 RES.	1980 NONRES	2000 NONRES	*** NOT RECEIVING TREATMENT ** 1980 RES.	2000 RES.	1980 NONRES	2000 NONRES	** PERCENT *** SERVED 1980	2000	** TREATMENT ** PLANTS 1980	2000
ALABAMA	3,898	4,140	0	0	0	0	4	0	0	0	0.1	0.0	3	0
ALASKA	400	694	0	0	0	0	21	0	0	0	5.2	0.0	13	0
ARIZONA	2,718	4,357	0	0	0	0	0	0	0	0	0.0	0.0	0	0
ARKANSAS	2,286	2,970	0	0	0	0	0	0	0	0	0.0	0.0	0	0
CALIFORNIA	23,669	26,786	0	0	0	0	0	0	0	0	0.0	0.0	0	0
COLORADO	2,889	4,371	0	0	0	0	0	0	0	0	0.0	0.0	0	0
CONNECTICUT	3,108	3,902	0	0	0	0	0	0	0	0	0.0	0.0	0	0
DELAWARE	595	841	0	0	0	0	0	0	0	0	0.0	0.0	0	0
DIST. OF COLUM.	638	694	0	0	0	0	0	0	0	0	0.0	0.0	0	0
FLORIDA	9,740	15,049	0	0	0	0	29	0	25	0	0.2	0.0	2	0
GEORGIA	5,464	7,053	0	0	0	0	8	0	0	0	0.1	0.0	3	0
HAWAII	965	1,366	0	0	0	0	0	0	0	0	0.0	0.0	0	0
IDAHO	944	1,183	0	0	0	0	0	0	0	0	0.0	0.0	1	0
ILLINOIS	11,418	12,358	0	0	0	0	4	0	0	0	0.0	0.0	6	0
INDIANA	5,490	6,059	0	0	0	0	1	0	0	0	0.0	0.0	1	0
IOWA	2,913	3,101	0	0	0	0	0	0	0	0	0.0	0.0	0	0
KANSAS	2,363	2,642	0	0	0	0	0	0	0	0	0.0	0.0	0	0
KENTUCKY	3,661	4,224	0	0	0	0	190	0	0	0	5.2	0.0	4	0
LOUISIANA	4,204	4,860	0	0	0	0	20	0	0	0	0.6	0.0	3	0
MAINE	1,125	1,222	0	0	0	0	98	0	3	0	8.7	0.0	30	0
MARYLAND	4,216	5,503	0	0	0	0	0	0	0	0	0.0	0.0	0	0
MASSACHUSETTS	5,737	6,736	0	0	0	0	210	0	27	0	3.6	0.0	15	0
MICHIGAN	9,258	10,314	0	0	0	0	3	0	0	0	0.0	0.0	3	0
MINNESOTA	4,077	4,505	0	0	0	0	3	0	0	0	0.1	0.0	10	0
MISSISSIPPI	2,521	2,748	0	0	0	0	4	0	0	0	0.1	0.0	3	0
MISSOURI	4,917	5,379	0	0	0	0	1	0	0	0	0.0	0.0	4	0
MONTANA	787	938	0	0	0	0	0	0	0	0	0.0	0.0	0	0
NEBRASKA	1,570	1,734	0	0	0	0	0	0	0	0	0.0	0.0	0	0
NEVADA	799	1,408	0	0	0	0	0	0	0	0	0.0	0.0	0	0
NEW HAMPSHIRE	921	1,306	0	0	0	0	63	0	2	0	6.9	0.0	16	0
NEW JERSEY	7,364	9,022	0	0	0	0	12	0	0	0	0.1	0.0	1	0
NEW MEXICO	1,300	1,701	0	0	0	0	0	0	0	0	0.0	0.0	0	0
NEW YORK	17,577	19,683	0	0	0	0	900	0	343	0	5.1	0.0	10	0
NORTH CAROLINA	5,874	7,419	0	0	0	0	1	0	0	0	0.0	0.0	1	0
NORTH DAKOTA	653	690	0	0	0	0	0	0	0	0	0.0	0.0	0	0
OHIO	10,797	12,237	0	0	0	0	0	0	0	0	0.0	0.0	2	0
OKLAHOMA	3,025	3,702	0	0	0	0	0	0	0	0	0.0	0.0	0	0
OREGON	2,633	3,289	0	0	0	0	0	0	0	0	0.0	0.0	0	0
PENNSYLVANIA	11,867	12,834	0	0	0	0	78	0	1	0	0.6	0.0	36	0
RHODE ISLAND	947	1,084	0	0	0	0	8	0	0	0	0.8	0.0	2	0
SOUTH CAROLINA	3,119	3,780	0	0	0	0	7	0	0	0	0.2	0.0	4	0
SOUTH DAKOTA	690	730	0	0	0	0	0	0	0	0	0.0	0.0	1	0
TENNESSEE	4,591	5,573	0	0	0	0	0	0	0	0	0.0	0.0	0	0
TEXAS	14,228	21,888	0	0	0	0	0	0	0	0	0.0	0.0	0	0
UTAH	1,461	1,963	0	0	0	0	0	0	0	0	0.0	0.0	1	0
VERMONT	511	607	0	0	0	0	1	0	0	0	0.2	0.0	1	0
VIRGINIA	5,346	6,755	0	0	0	0	1	0	0	0	0.0	0.0	1	0
WASHINGTON	4,130	4,839	0	0	0	0	0	0	0	0	0.0	0.0	1	0
WEST VIRGINIA	1,950	2,101	0	0	0	0	98	0	0	0	5.0	0.0	28	0
WISCONSIN	4,705	5,553	0	0	0	0	0	0	0	0	0.0	0.0	0	0
WYOMING	450	484	0	0	0	0	0	0	0	0	0.0	0.0	0	0
AMERICAN SAMOA	33	48	0	0	0	0	0	0	0	0	0.0	0.0	0	0
GUAM	110	275	0	0	0	0	0	0	0	0	0.0	0.0	0	0
N. MARIANAS	17	33	0	0	0	0	0	0	0	0	0.0	0.0	0	0
PUERTO RICO	3,197	4,700	0	0	0	0	86	0	0	0	2.7	0.0	1	0
PAC. TR. TERR.	118	183	0	0	0	0	0	0	0	0	0.0	0.0	0	0
VIRGIN ISLANDS	99	116	0	0	0	0	0	0	0	0	0.0	0.0	0	0
U.S. TOTAL	230,875	278,888	0	0	0	0	1,876	0	404	0	0.6	0.0	237	0

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TABLE 16

POPULATIONS SERVED BY FACILITIES DESIGNED FOR LESS THAN SECONDARY TREATMENT PRESENT AND PROJECTED, RESIDENT AND NONRESIDENT

Table 16 summarizes 1980 populations served by facilities that treat the collected wastes to a degree less than what is defined as secondary treatment and discharge the wastes to surface waters.

Facilities included in this summary provide primary or advanced primary treatment (comminution, screening, grit removal, etc.) plus primary sedimentation. Chlorination may or may not be a unit process. Advanced primary treatment facilities may provide some biological treatment, but are unable to treat wastewater to the degree necessary to comply with EPA's definition of secondary treatment.

Also summarized for each State and the nation is the number of facilities providing less than secondary treatment.

The terms total population, resident, nonresident, receiving treatment, not receiving treatment, and percent served are defined in the discussion provided for Table 12.

DECEMBER 31, 1982
TABLE 16

1982 NEEDS SURVEY

POPULATIONS SERVED BY FACILITIES DESIGNED FOR LESS THAN SECONDARY TREATMENT PRESENT AND PROJECTED, RESIDENT AND NONRESIDENT (POPULATION IN THOUSANDS)

	*** POPULATION ***		**** RECEIVING TREATMENT *****				*** NOT RECEIVING TREATMENT **				** PERCENT SERVED ***		** TREATMENT PLANTS **	
STATE	1980 TOTAL	2000 TOTAL	1980 RES.	2000 RES.	1980 NONRES	2000 NONRES	1980 RES.	2000 RES.	1980 NONRES	2000 NONRES	1980	2000	1980	2000
ALABAMA	3,890	4,140	125	0	11	0	15	0	0	0	3.1	0.0	24	0
ALASKA	400	694	138	317	8	5	45	0	0	0	32.7	45.6	6	1
ARIZONA	2,718	4,357	396	0	0	0	14	0	0	0	14.5	0.0	13	0
ARKANSAS	2,286	2,970	494	0	5	0	42	0	0	0	21.6	0.0	173	0
CALIFORNIA	23,669	26,786	8,853	9,010	577	338	276	98	0	0	37.4	33.6	58	7
COLORADO	2,889	4,371	112	0	1	0	2	0	0	0	3.8	0.0	13	0
CONNECTICUT	3,108	3,982	332	0	1	0	78	0	0	0	10.6	0.0	9	0
DELAWARE	595	661	12	0	21	0	8	0	3	0	2.0	0.0	6	0
DIST. OF COLUM.	638	694	0	0	0	0	0	0	0	0	0.0	0.0	0	0
FLORIDA	9,740	15,049	103	0	22	0	11	0	0	0	1.0	0.0	9	0
GEORGIA	5,464	7,053	147	0	11	0	48	0	0	0	2.6	0.0	44	0
HAWAII	965	1,366	498	667	43	67	105	0	0	0	51.6	48.8	18	2
IDAHO	944	1,183	123	0	1	0	11	0	0	0	13.1	0.0	65	0
ILLINOIS	11,418	12,358	355	0	1	0	6	0	0	0	3.1	0.0	122	0
INDIANA	5,490	6,059	54	0	0	0	1	0	2	0	0.9	0.0	16	0
IOWA	2,913	3,101	726	0	30	0	34	0	0	0	24.9	0.0	337	0
KANSAS	2,363	2,642	725	0	4	0	39	0	0	0	30.7	0.0	154	0
KENTUCKY	3,661	4,224	77	0	0	0	20	0	0	0	2.1	0.0	14	0
LOUISIANA	4,204	4,880	424	0	3	0	56	0	0	0	10.1	0.0	76	0
MAINE	1,125	1,222	94	0	26	0	68	0	0	0	8.3	0.0	16	0
MARYLAND	4,216	5,583	74	0	3	0	19	0	0	0	1.7	0.0	19	0
MASSACHUSETTS	5,737	6,736	2,278	0	41	0	392	0	0	0	39.7	0.0	13	0
MICHIGAN	9,258	10,314	459	0	3	0	112	0	0	0	4.9	0.0	41	0
MINNESOTA	4,077	4,385	178	0	4	0	18	0	0	0	4.3	0.0	123	0
MISSISSIPPI	2,521	2,740	173	0	1	0	61	0	0	0	6.8	0.0	85	0
MISSOURI	4,917	5,379	1,495	0	842	0	58	0	0	0	30.4	0.0	245	0
MONTANA	787	938	46	0	0	0	2	0	0	0	5.9	0.0	38	0
NEBRASKA	1,570	1,734	529	0	1	0	8	0	0	0	33.7	0.0	49	0
NEVADA	799	1,408	17	0	0	0	0	0	0	0	2.1	0.0	3	0
NEW HAMPSHIRE	921	1,306	158	0	13	0	64	0	4	0	17.2	0.0	18	0
NEW JERSEY	7,364	9,022	1,355	0	319	0	94	0	0	0	18.4	0.0	67	0
NEW MEXICO	1,300	1,781	24	0	1	0	7	0	0	0	1.8	0.0	8	0
NEW YORK	17,577	19,683	3,795	0	949	0	235	0	0	0	21.5	0.0	119	0
NORTH CAROLINA	5,874	7,419	151	0	2	0	51	0	0	0	2.5	0.0	32	0
NORTH DAKOTA	653	698	10	0	0	0	0	0	0	0	1.6	0.0	20	0
OHIO	10,797	12,237	1,046	0	4	0	74	0	0	0	9.6	0.0	86	0
OKLAHOMA	3,025	3,782	430	0	0	0	32	0	0	0	14.2	0.0	197	0
OREGON	2,633	3,209	33	0	0	0	4	0	0	0	1.2	0.0	5	0
PENNSYLVANIA	11,867	12,854	1,771	0	107	0	138	0	0	0	14.9	0.0	50	0
RHODE ISLAND	947	1,084	280	0	39	0	34	0	0	0	29.6	0.0	6	0
SOUTH CAROLINA	3,119	3,780	184	0	2	0	61	0	3	0	5.9	0.0	74	0
SOUTH DAKOTA	690	730	129	0	2	0	0	0	0	0	18.7	0.0	137	0
TENNESSEE	4,591	5,373	102	0	0	0	35	0	0	0	2.2	0.0	29	0
TEXAS	14,228	21,888	652	0	4	0	45	0	0	0	4.5	0.0	85	0
UTAH	1,461	1,963	0	0	0	0	0	0	0	0	0.0	0.0	0	0
VERMONT	511	607	104	0	17	0	29	0	2	0	20.9	0.0	21	0
VIRGINIA	5,346	6,755	822	0	35	0	109	0	0	0	15.3	0.0	98	0
WASHINGTON	4,130	4,859	1,258	635	338	330	158	0	0	0	30.4	13.0	72	2
WEST VIRGINIA	1,950	2,101	221	0	0	0	57	0	0	0	11.3	0.0	45	0
WISCONSIN	4,705	5,553	163	0	29	0	18	0	1	0	3.4	0.0	104	0
WYOMING	450	484	80	0	0	0	0	0	0	0	17.9	0.0	35	0
AMERICAN SAMOA	33	40	1	0	0	0	27	0	0	0	4.2	0.0	2	0
GUAM	110	275	58	0	0	0	21	0	0	0	53.2	0.0	2	0
N. MARIANAS	17	33	1	0	0	0	8	0	0	0	8.1	0.0	2	0
PUERTO RICO	3,197	4,700	1,662	0	0	0	916	0	0	0	52.0	0.0	27	0
PAC. TR TERR.	118	183	2	0	0	0	1	0	0	0	2.0	0.0	1	0
VIRGIN ISLANDS	99	116	53	0	3	0	8	0	0	0	53.5	0.0	2	0
U.S. TOTAL	230,875	278,888	33,684	10,638	3,246	740	3,796	98	29	0	14.6	3.8	3,119	12

TABLE 17

PLANT LOADINGS, REMOVAL EFFICIENCIES, AND DISCHARGE RATES FOR FACILITIES EXISTING IN 1982

FACILITIES DESIGNED FOR LESS THAN SECONDARY TREATMENT

Table 17 summarizes the performance of all treatment facilities designed to provide less than secondary treatment. Information is provided as a total for all States and U.S. Territories with a national total at the bottom of the table.

This table is designed to estimate the quantities of various pollutants accepted by a treatment plant and the quantities of these same pollutants in the effluent. Quantities are given in metric tons per day for all parameters. BOD_5 and Solids are summarized in this table. No information is given for nutrient removal because these constituents are not removed in significant amounts by this degree of treatment.

These data were derived from the daily average flow, daily average influent concentrations, and the daily average effluent concentrations. The averages are based on the actual performance of each individual treatment plant for the most recent 12 month period for which information could be obtained. The values calculated for each plant are summed into State and national totals. The main source of information for flow and concentration values was the self-monitoring reports submitted by every facility with a NPDES permit.

Included in this summary are plants designed to provide primary or advanced primary treatment. Excluded are facilities designed to consistently provide secondary or better degrees of treatment, as well as any with efficiencies less than primary.

All flows are reported in thousand cubic meters per day. The influent and effluent BOD_5 and Solids values are State totals in metric tons per day.

Table 17 is an extension of Table 16. A summary of the projected year 2000 performance of facilities designed to provide less than secondary treatment is given on Table 18.

Some States may show influent and/or effluent values of BOD_5 or Solids equal to zero, but still have a percent removal calculated. This is due to the influent and/or effluent value being less than 0.5 metric tons per day in which case the value is rounded to zero.

DECEMBER 31, 1982
TABLE 17

1982 NEEDS SURVEY
PLANT LOADINGS, REMOVAL EFFICIENCIES AND DISCHARGE RATES FOR FACILITIES EXISTING IN 1982
FACILITIES DESIGNED FOR LESS THAN SECONDARY TREATMENT
(METRIC TONS PER DAY)

		REMOVAL EFFICIENCIES					
		BOD5			SOLIDS		
STATE	ACTUAL FLOW	INFLUENT	EFFLUENT	% REM.	INFLUENT	EFFLUENT	% REM.
ALABAMA	54	9	5	49.2	10	5	45.1
ALASKA	108	16	12	25.1	22	10	54.3
ARIZONA	112	27	4	83.2	27	5	82.6
ARKANSAS	228	62	10	83.3	59	27	54.0
CALIFORNIA	4,224	1,242	594	52.1	1,458	449	69.1
COLORADO	50	12	2	85.4	12	1	89.3
CONNECTICUT	218	32	18	45.1	38	12	69.2
DELAWARE	10	2	1	64.0	2	1	71.6
DIST. OF COLUM.	0	0	0	0.0	0	0	0.0
FLORIDA	52	11	3	75.7	10	2	74.9
GEORGIA	77	13	3	76.8	12	3	77.3
HAWAII	335	50	32	35.2	48	19	60.0
IDAHO	115	21	4	78.8	19	5	72.3
ILLINOIS	207	49	16	66.3	53	14	74.3
INDIANA	34	5	2	60.3	3	1	71.3
IOWA	386	118	38	67.4	131	33	74.4
KANSAS	367	104	39	62.3	87	22	74.3
KENTUCKY	46	12	7	44.9	17	5	68.7
LOUISIANA	166	32	10	68.1	36	12	66.3
MAINE	87	23	9	61.7	24	10	56.1
MARYLAND	38	8	3	63.3	6	2	70.0
MASSACHUSETTS	2,147	336	233	30.7	357	183	48.7
MICHIGAN	326	89	16	81.4	72	17	77.0
MINNESOTA	89	30	4	85.3	24	5	81.5
MISSISSIPPI	121	23	4	83.8	23	8	65.5
MISSOURI	998	227	139	38.6	294	109	62.9
MONTANA	24	3	1	60.7	3	1	74.1
NEBRASKA	317	99	76	22.9	106	43	59.7
NEVADA	12	2	0	86.7	2	0	83.3
NEW HAMPSHIRE	135	27	17	37.1	29	11	63.6
NEW JERSEY	801	193	108	44.0	143	57	60.3
NEW MEXICO	8	2	1	53.3	2	1	53.2
NEW YORK	2,976	392	150	61.8	362	147	59.4
NORTH CAROLINA	98	23	3	86.8	22	3	85.6
NORTH DAKOTA	2	1	0	81.8	1	0	85.0
OHIO	615	113	42	62.6	108	35	67.5
OKLAHOMA	177	37	7	81.7	38	9	75.5
OREGON	19	3	0	86.1	3	1	76.9
PENNSYLVANIA	1,333	227	94	58.5	299	97	67.7
RHODE ISLAND	278	22	13	41.7	35	14	58.8
SOUTH CAROLINA	107	19	8	59.7	22	7	66.3
SOUTH DAKOTA	54	16	3	81.3	15	3	76.3
TENNESSEE	69	13	5	61.6	12	4	65.7
TEXAS	295	69	14	78.9	65	15	77.1
UTAH	0	0	0	0.0	0	0	0.0
VERMONT	100	22	9	59.5	14	6	58.0
VIRGINIA	365	64	27	58.2	60	14	76.4
WASHINGTON	887	183	104	43.3	197	74	62.5
WEST VIRGINIA	105	30	11	63.7	27	7	73.2
WISCONSIN	89	23	7	67.0	18	5	72.5
WYOMING	49	10	2	77.4	9	2	73.1
AMERICAN SAMOA	1	0	0	3.1	0	0	4.7
GUAM	31	7	7	0.0	8	8	0.0
N. MARIANAS	2	0	0	68.7	0	0	41.6
PUERTO RICO	475	124	52	57.7	105	31	70.2
PAC. TR. TERR.	0	0	0	80.0	0	0	80.0
VIRGIN ISLANDS	17	3	3	14.9	4	2	44.4
U.S. TOTALS	20,063	4,280	1,975	53.8	4,553	1,558	65.7

NOTES: 1. FLOW IN CUBIC METERS X 1000 PER DAY. 2. SHORT TONS = METRIC TONS X 0.9072.

3. SUM OF ENTRIES MAY NOY EQUAL TOTALS DUE TO ROUND-OFFS.

TABLE 18

PLANT LOADINGS, REMOVAL EFFICIENCIES, AND DISCHARGE RATES FOR FACILITIES TO BE IN OPERATION IN 2000 FACILITIES DESIGNED FOR LESS THAN SECONDARY TREATMENT

Table 18 summarizes the expected performance in the year 2000 of all treatment facilities designed to provide less than secondary treatment. Information is provided as a total for all States and U.S. Territories with a national total at the bottom of the table.

This table is designed to estimate the quantities of various pollutants that will be received by a treatment plant and the quantities of these same pollutants that will be in the effluent in 2000. Quantities are given in metric tons per day for all parameters. BOD_5 and Solids are summarized in this table. No information is given for nutrient removal because these constituents are not removed in significant amounts by this degree of treatment.

These data were derived from the daily average flow, daily average influent concentrations, and the daily average effluent concentrations. The averages are based on the predicted year 2000 situation. The values calculated for each plant are summed into State and national totals.

Included in this summary are plants designed to provide primary or advanced primary treatment. Such plants will be allowed to exist in the year 2000 according to specific new provisions in the Clean Water Act. An example of this is the ocean discharge waivers permitted by Section 301(h) allowing less than secondary facilities to discharge to the ocean under certain conditions. Excluded are facilities designed to consistently provide secondary or better degrees of treatment, as well as those with efficiencies less than primary.

Table 18 is an extension of Tables 16 and 17.

All flows are reported in thousand cubic meters per day. The influent and effluent BOD_5 and Solids values are projected State totals in metric tons per day.

DECEMBER 31, 1982
TABLE 18

1982 NEEDS SURVEY
PLANT LOADINGS, REMOVAL EFFICIENCIES AND DISCHARGE RATES FOR FACILITIES TO BE IN OPERATION IN 2000
FACILITIES DESIGNED FOR LESS THAN SECONDARY TREATMENT
(METRIC TONS PER DAY)

STATE	PROJECTED FLOW	************** REMOVAL EFFICIENCIES **************					
		********* BOD5 *********			******** SOLIDS ********		
		INFLUENT	EFFLUENT	% REM.	INFLUENT	EFFLUENT	% REM.
ALABAMA	0	0	0	0.0	0	0	0.0
ALASKA	156	23	19	19.9	31	16	50.0
ARIZONA	0	0	0	0.0	0	0	0.0
ARKANSAS	0	0	0	0.0	0	0	0.0
CALIFORNIA	4,304	1,293	505	60.9	1,459	389	73.3
COLORADO	0	0	0	0.0	0	0	0.0
CONNECTICUT	0	0	0	0.0	0	0	0.0
DELAWARE	0	0	0	0.0	0	0	0.0
DIST. OF COLUM.	0	0	0	0.0	0	0	0.0
FLORIDA	0	0	0	0.0	0	0	0.0
GEORGIA	0	0	0	0.0	0	0	0.0
HAWAII	405	117	56	52.0	81	45	44.1
IDAHO	0	0	0	0.0	0	0	0.0
ILLINOIS	0	0	0	0.0	0	0	0.0
INDIANA	0	0	0	0.0	0	0	0.0
IOWA	0	0	0	0.0	0	0	0.0
KANSAS	0	0	0	0.0	0	0	0.0
KENTUCKY	0	0	0	0.0	0	0	0.0
LOUISIANA	0	0	0	0.0	0	0	0.0
MAINE	0	0	0	0.0	0	0	0.0
MARYLAND	0	0	0	0.0	0	0	0.0
MASSACHUSETTS	0	0	0	0.0	0	0	0.0
MICHIGAN	0	0	0	0.0	0	0	0.0
MINNESOTA	0	0	0	0.0	0	0	0.0
MISSISSIPPI	0	0	0	0.0	0	0	0.0
MISSOURI	0	0	0	0.0	0	0	0.0
MONTANA	0	0	0	0.0	0	0	0.0
NEBRASKA	0	0	0	0.0	0	0	0.0
NEVADA	0	0	0	0.0	0	0	0.0
NEW HAMPSHIRE	0	0	0	0.0	0	0	0.0
NEW JERSEY	0	0	0	0.0	0	0	0.0
NEW MEXICO	0	0	0	0.0	0	0	0.0
NEW YORK	0	0	0	0.0	0	0	0.0
NORTH CAROLINA	0	0	0	0.0	0	0	0.0
NORTH DAKOTA	0	0	0	0.0	0	0	0.0
OHIO	0	0	0	0.0	0	0	0.0
OKLAHOMA	0	0	0	0.0	0	0	0.0
OREGON	0	0	0	0.0	0	0	0.0
PENNSYLVANIA	0	0	0	0.0	0	0	0.0
RHODE ISLAND	0	0	0	0.0	0	0	0.0
SOUTH CAROLINA	0	0	0	0.0	0	0	0.0
SOUTH DAKOTA	0	0	0	0.0	0	0	0.0
TENNESSEE	0	0	0	0.0	0	0	0.0
TEXAS	0	0	0	0.0	0	0	0.0
UTAH	0	0	0	0.0	0	0	0.0
VERMONT	0	0	0	0.0	0	0	0.0
VIRGINIA	0	0	0	0.0	0	0	0.0
WASHINGTON	677	136	95	30.0	169	70	58.6
WEST VIRGINIA	0	0	0	0.0	0	0	0.0
WISCONSIN	0	0	0	0.0	0	0	0.0
WYOMING	0	0	0	0.0	0	0	0.0
AMERICAN SAMOA	0	0	0	0.0	0	0	0.0
GUAM	0	0	0	0.0	0	0	0.0
N. MARIANAS	0	0	0	0.0	0	0	0.0
PUERTO RICO	0	0	0	0.0	0	0	0.0
PAC. TR. TERR.	0	0	0	0.0	0	0	0.0
VIRGIN ISLANDS	0	0	0	0.0	0	0	0.0
U.S. TOTALS	5,543	1,568	674	57.0	1,739	519	70.1

NOTES: 1. FLOW IN CUBIC METERS X 1000 PER DAY. 2. SHORT TONS = METRIC TONS X 0.9072.

3. SUM OF ENTRIES MAY NOY EQUAL TOTALS DUE TO ROUND-OFFS.

TABLE 19

POPULATIONS SERVED BY SECONDARY TREATMENT PRESENT AND PROJECTED, RESIDENT AND NONRESIDENT

Table 19 summarizes the 1980 populations served and the 2000 populations projected to be served by facilities designed to provide secondary treatment. In general, this type of facility includes some type of preliminary treatment process followed by a biological process (trickling filter, activated sludge, rotating biological contactor, etc.) with no additional treatment processes except disinfection.

The 2000 total State population values reported are from estimates provided by BEA. The 1980 total State population values are based on the 1980 populations reported in the April 1981 Report of the Bureau of Census. The Percent Served is a function of the residents receiving treatment in relation to the total State population.

The total population within the service area of an authority is the sum of persons receiving treatment and not receiving treatment. Those persons not receiving treatment reside in the service area but do not contribute to the treatment facility because they are not on a sewer system.

Resident populations are permanent residents in the service area of a sewerage authority. Nonresident populations include commuters living in one area and working in another, as well as all transients, tourists, and seasonal residents.

Also summarized for each State and the nation is the number of secondary facilities in operation in 1982 and the number expected to be operational in 2000.

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TABLE 19

1982 NEEDS SURVEY

POPULATIONS SERVED BY SECONDARY TREATMENT
PRESENT AND PROJECTED, RESIDENT AND NONRESIDENT
(POPULATION IN THOUSANDS)

STATE	*** POPULATION ***		**** RECEIVING TREATMENT *****				*** NOT RECEIVING TREATMENT **				** PERCENT *** SERVED		** TREATMENT ** PLANTS	
	1980 TOTAL	2000 TOTAL	1980 RES.	2000 RES.	1980 NONRES	2000 NONRES	1980 RES.	2000 RES.	1980 NONRES	2000 NONRES	1980	2000	1980	2000
ALABAMA	3,890	4,140	1,548	1,990	82	163	209	42	1	0	39.8	48.0	192	221
ALASKA	400	694	63	322	2	13	17	14	0	0	15.9	46.4	37	119
ARIZONA	2,718	4,357	1,610	3,463	80	32	108	39	4	0	59.2	79.4	38	83
ARKANSAS	2,286	2,970	545	1,224	12	2	23	0	0	0	23.8	41.2	60	128
CALIFORNIA	23,669	26,786	3,584	6,091	136	427	192	5	0	0	15.1	22.7	158	218
COLORADO	2,889	4,371	1,240	1,931	70	129	10	0	0	0	42.9	44.1	222	237
CONNECTICUT	3,108	3,902	1,431	2,261	12	35	624	337	9	0	46.0	57.9	66	98
DELAWARE	595	841	88	10	30	51	31	0	0	0	14.8	1.2	8	6
DIST. OF COLUM.	638	694	0	0	0	0	0	0	0	0	0.0	0.0	0	0
FLORIDA	9,740	15,049	2,572	4,891	373	588	1,110	265	0	0	26.4	32.5	101	85
GEORGIA	5,464	7,053	2,501	1,654	107	63	390	77	0	0	45.7	23.4	294	250
HAWAII	965	1,366	70	488	40	155	39	0	0	0	7.2	35.7	14	34
IDAHO	944	1,183	266	514	7	33	33	0	5	0	28.2	43.5	38	105
ILLINOIS	11,418	12,358	1,513	508	1	5	11	0	0	0	13.2	4.1	295	407
INDIANA	5,490	6,059	918	796	10	15	43	1	30	0	16.7	13.1	175	142
IOWA	2,913	3,101	1,231	1,682	44	63	53	1	0	0	42.2	54.2	322	703
KANSAS	2,363	2,642	965	2,202	12	20	60	0	0	0	40.8	83.3	224	349
KENTUCKY	3,661	4,224	1,280	1,817	40	45	214	92	0	0	34.9	43.0	154	146
LOUISIANA	4,204	4,888	2,171	4,021	65	99	155	0	1	0	51.6	82.4	209	306
MAINE	1,125	1,222	450	857	57	124	149	101	1	0	40.0	70.1	76	155
MARYLAND	4,216	5,583	497	288	98	317	98	21	2	0	11.8	5.1	71	75
MASSACHUSETTS	5,737	6,734	1,133	4,403	9	147	512	520	33	53	19.7	65.3	76	94
MICHIGAN	9,258	10,314	366	459	9	19	110	66	1	0	3.9	4.4	145	196
MINNESOTA	4,077	4,905	2,512	1,103	15	11	103	11	0	0	61.6	24.5	343	399
MISSISSIPPI	2,521	2,740	1,240	961	7	11	174	45	1	0	49.2	35.0	219	221
MISSOURI	4,917	5,379	1,980	4,935	329	3,103	90	1	0	0	40.2	91.7	287	576
MONTANA	787	938	400	650	30	34	11	0	0	0	50.8	69.3	87	130
NEBRASKA	1,570	1,734	651	1,565	13	21	26	0	0	0	41.4	90.2	267	273
NEVADA	799	1,408	231	462	18	32	2	0	0	0	29.0	32.8	12	21
NEW HAMPSHIRE	921	1,306	231	737	33	154	130	162	10	19	25.1	56.4	44	93
NEW JERSEY	7,364	9,022	3,830	5,367	623	1,253	436	86	44	6	52.0	59.4	132	78
NEW MEXICO	1,300	1,781	711	1,170	9	14	68	2	0	0	54.7	65.7	41	66
NEW YORK	17,577	19,683	6,514	12,436	1,280	3,089	1,434	538	41	0	37.0	63.2	206	528
NORTH CAROLINA	5,874	7,419	1,381	1,391	172	262	697	312	4	14	23.5	18.7	406	254
NORTH DAKOTA	653	690	421	536	0	1	0	0	0	0	64.6	77.7	234	256
OHIO	10,797	12,237	3,033	1,404	8	9	272	4	11	0	28.0	11.4	278	154
OKLAHOMA	3,025	3,702	1,034	1,996	1	10	69	18	0	0	34.1	53.9	144	327
OREGON	2,633	3,209	376	202	19	11	55	0	1	0	14.3	6.3	69	69
PENNSYLVANIA	11,867	12,854	4,540	4,236	261	684	491	98	0	0	38.2	32.9	321	714
RHODE ISLAND	947	1,084	337	710	0	67	212	69	0	0	35.5	65.5	12	19
SOUTH CAROLINA	3,119	3,700	869	2,015	190	291	310	65	0	0	27.8	54.4	143	157
SOUTH DAKOTA	690	730	279	328	7	4	1	0	0	0	40.5	45.0	91	221
TENNESSEE	4,591	5,573	1,420	1,404	30	13	420	46	0	0	30.9	25.2	157	86
TEXAS	14,228	21,000	5,454	8,939	184	221	274	2	0	5	38.3	42.5	767	1,582
UTAH	1,461	1,763	1,006	0	181	0	16	0	0	0	68.9	0.0	67	0
VERMONT	511	607	109	148	18	25	51	50	1	3	21.3	24.6	53	62
VIRGINIA	5,346	6,755	729	2,211	89	136	86	24	0	0	13.6	32.7	79	281
WASHINGTON	4,130	4,859	620	3,185	93	363	50	85	13	0	15.0	65.5	134	290
WEST VIRGINIA	1,950	2,101	352	1,473	16	22	67	5	0	0	18.0	70.1	79	402
WISCONSIN	4,705	5,553	923	947	24	80	57	13	0	0	19.6	17.0	250	276
WYOMING	450	484	245	423	15	25	1	0	0	0	54.5	87.4	55	84
AMERICAN SAMOA	33	40	0	32	0	1	0	2	0	0	0.0	80.4	0	1
GUAM	110	275	7	196	0	3	1	12	0	0	6.7	71.5	2	3
N. MARIANAS	17	33	0	2	0	0	0	0	0	0	0.0	6.9	0	1
PUERTO RICO	3,197	4,700	94	3,137	0	0	175	745	0	0	2.9	66.7	5	26
PAC. TR. TERR.	118	183	7	70	0	3	33	39	0	0	6.5	38.6	4	14
VIRGIN ISLANDS	99	116	26	128	0	3	22	7	0	0	26.4	110.6	3	5
U.S. TOTAL	230,075	278,888	67,609	106,417	4,817	10,611	10,049	4,123	225	103	29.3	38.1	7,946	11,756

TABLE 20

PLANT LOADINGS, REMOVAL EFFICIENCIES, AND DISCHARGE RATES FOR FACILITIES EXISTING IN 1982 FACILITIES DESIGNED TO PROVIDE SECONDARY TREATMENT

Table 20 summarizes the performance of all treatment facilities designed to provide secondary treatment. Information is provided for all States and U.S. Territories with a national total at the bottom of the table.

This table provides estimates of the total quantity of BOD_5 and Solids accepted by treatment plants within the State and the total quantity of these same pollutants in the effluent. Quantities are given in metric tons per day for these parameters. Quantities of nutrients removed are not summarized in this table because, by definition, secondary treatment plants do not have the capability for nutrient removal.

These data were derived from the daily average flow and the daily average influent and effluent BOD_5 and Solids concentrations. The averages are based on the actual performances of each individual treatment plant during the most recent 12 month period for which information could be obtained. The values calculated for each plant are summed into State and national totals. The main source of information for flow and concentration values was the self-monitoring reports submitted by every facility with an NPDES permit.

Included in this summary are plants designed to provide secondary treatment. Excluded are facilities designed to consistently provide less than, or better than, secondary treatment.

Table 20 is an extension of Table 19. A summary of the projected year 2000 performance of secondary facilities is given in Table 21.

All flows are reported in thousand cubic meters per day.

Some States may show influent and/or effluent values of BOD_5 or Solids equal to zero, but still have a percent removal calculated. This is due to the influent and/or effluent value being less than 0.5 metric tons per day in which case the value is rounded to zero.

DECEMBER 31, 1982
TABLE 20

1982 NEEDS SURVEY
PLANT LOADINGS, REMOVAL EFFICIENCIES AND DISCHARGE RATES FOR FACILITIES EXISTING IN 1982
FACILITIES DESIGNED TO PROVIDE SECONDARY TREATMENT
(METRIC TONS PER DAY)

		################ REMOVAL EFFICIENCIES ################					
		######### BOD5 #########			######## SOLIDS ########		
STATE	ACTUAL FLOW	INFLUENT	EFFLUENT	% REM.	INFLUENT	EFFLUENT	% REM.
ALABAMA	920	155	18	88.1	154	27	82.3
ALASKA	44	7	2	79.1	7	2	77.2
ARIZONA	644	122	15	87.6	136	15	88.9
ARKANSAS	333	78	10	87.0	77	14	81.2
CALIFORNIA	1,651	484	44	90.3	475	48	89.9
COLORADO	543	130	13	89.7	118	13	88.5
CONNECTICUT	1,015	161	19	88.3	164	39	76.3
DELAWARE	36	12	1	92.0	10	2	77.5
DIST. OF COLUM.	0	0	0	0.0	0	0	0.0
FLORIDA	2,832	472	47	90.1	510	61	87.9
GEORGIA	1,591	317	44	86.0	295	74	74.8
HAWAII	43	10	1	87.9	10	1	89.0
IDAHO	164	47	3	93.9	46	3	94.0
ILLINOIS	1,107	166	19	88.6	207	22	89.2
INDIANA	1,485	271	25	90.9	294	19	93.4
IOWA	695	259	28	89.1	209	31	85.1
KANSAS	411	86	11	87.6	91	12	86.4
KENTUCKY	716	110	34	68.9	140	31	78.0
LOUISIANA	977	191	30	84.1	201	37	81.4
MAINE	279	59	7	87.5	73	11	84.4
MARYLAND	391	103	29	72.0	110	25	76.5
MASSACHUSETTS	773	147	31	78.9	165	33	79.8
MICHIGAN	228	38	5	86.1	43	4	90.2
MINNESOTA	1,309	324	41	87.3	398	42	89.4
MISSISSIPPI	595	119	16	86.7	133	23	82.7
MISSOURI	1,130	223	45	79.7	269	44	83.7
MONTANA	219	41	7	83.3	34	7	79.3
NEBRASKA	317	75	8	88.7	76	9	88.3
NEVADA	101	20	3	86.5	22	3	87.7
NEW HAMPSHIRE	168	40	5	88.2	34	4	88.9
NEW JERSEY	2,150	709	394	44.5	800	367	54.1
NEW MEXICO	284	58	10	82.9	62	9	85.4
NEW YORK	4,619	593	125	78.8	639	127	80.1
NORTH CAROLINA	925	197	20	89.7	201	26	87.1
NORTH DAKOTA	136	32	3	92.0	30	4	86.1
OHIO	2,028	420	120	71.3	544	112	79.3
OKLAHOMA	421	88	11	87.6	85	12	85.8
OREGON	383	89	10	88.6	89	16	81.8
PENNSYLVANIA	2,681	435	67	84.5	527	96	81.6
RHODE ISLAND	200	5C	6	87.2	37	11	69.9
SOUTH CAROLINA	590	170	40	76.2	124	27	78.0
SOUTH DAKOTA	125	33	3	89.7	30	3	89.3
TENNESSEE	1,144	413	47	88.5	465	70	84.9
TEXAS	2,737	573	57	90.0	567	88	84.6
UTAH	677	101	13	86.9	102	15	85.3
VERMONT	63	12	1	89.5	15	1	91.4
VIRGINIA	467	113	8	92.6	106	14	87.1
WASHINGTON	410	85	9	89.1	81	9	88.3
WEST VIRGINIA	162	34	11	69.0	35	7	80.0
WISCONSIN	556	142	14	90.0	115	12	89.6
WYOMING	122	24	7	72.5	25	7	73.0
AMERICAN SAMOA	0	0	0	0.0	0	0	0.0
GUAM	2	0	0	92.5	0	0	96.0
N. MARIANAS	0	0	0	0.0	0	0	0.0
PUERTO RICO	41	12	2	85.9	12	2	87.2
PAC. TR. TERR.	0	0	0	87.2	0	0	82.0
VIRGIN ISLANDS	6	1	0	84.9	1	0	85.0
U.S. TOTALS	41,671	8,623	1,539	82.1	9,197	1,693	81.5

NOTES: 1. FLOW IN CUBIC METERS X 1000 PER DAY. 2. SHORT TONS = METRIC TONS X 0.9072.

3. SUM OF ENTRIES MAY NOT EQUAL TOTALS DUE TO ROUND-OFFS.

TABLE 21

PLANT LOADINGS, REMOVAL EFFICIENCIES, AND DISCHARGE RATES FOR FACILITIES PROJECTED FOR 2000

FACILITIES DESIGNED TO PROVIDE SECONDARY TREATMENT

Table 21 summarizes the expected performance in the year 2000 of all treatment facilities designed to provide secondary treatment. Information is provided for all States and U.S. Territories with a national total at the bottom of the table.

This table provides an estimate of the total quantity of BOD_5 and Solids that will be received by treatment plants within the State and the total quantity of these same pollutants that will be in the effluent in 2000. Quantities are given in metric tons per day for these parameters. Quantities of nutrients removed are not summarized in this table because, by definition, secondary treatment plants do not have the capability for nutrient removal.

These data were derived from the daily average flow and the daily average influent and effluent BOD_5 and Solids concentrations. The averages are based on the predicted year 2000 situation. The values calculated for each plant are summed into State and national totals.

Included in this summary are plants designed to provide secondary treatment. Excluded are facilities designed to consistently provide less than, or greater than, secondary treatment.

Table 21 is an extension of Tables 19 and 20.

All flows are reported in thousand cubic meters per day.

Some States may show influent and/or effluent values of BOD_5 or Solids equal to zero, but still have a percent removal calculated. This is due to the influent and/or effluent value being less than 0.5 metric tons per day in which case the value is rounded to zero.

DECEMBER 31, 1982
TABLE 21

1982 NEEDS SURVEY
PLANT LOADINGS, REMOVAL EFFICIENCIES AND DISCHARGE RATES FOR FACILITIES PROJECTED FOR 2000
FACILITIES DESIGNED TO PROVIDE SECONDARY TREATMENT
(METRIC TONS PER DAY)

		**************** REMOVAL EFFICIENCIES ****************					
		********* BOD5 *********			******** SOLIDS ********		
STATE	PROJECTED FLOW	INFLUENT	EFFLUENT	% REM.	INFLUENT	EFFLUENT	% REM.
ALABAMA	1,961	420	59	86.0	426	60	85.9
ALASKA	196	38	6	84.2	40	6	84.1
ARIZONA	1,271	289	38	86.8	282	40	85.9
ARKANSAS	606	146	18	87.5	146	19	86.7
CALIFORNIA	3,348	979	99	89.9	897	108	88.0
COLORADO	886	227	27	88.2	214	27	87.3
CONNECTICUT	1,633	312	47	84.9	324	47	85.6
DELAWARE	13	3	0	87.7	4	0	88.1
DIST. OF COLUM.	0	0	0	0.0	0	0	0.0
FLORIDA	2,709	581	81	86.0	633	81	87.1
GEORGIA	1,051	227	31	86.1	210	34	83.8
HAWAII	225	52	7	87.1	52	7	87.0
IDAHO	331	97	10	89.7	102	10	90.2
ILLINOIS	237	48	7	85.0	56	7	86.8
INDIANA	845	116	16	85.9	124	16	86.8
IOWA	1,063	415	32	92.3	328	39	88.1
KANSAS	1,241	308	37	87.8	338	41	87.8
KENTUCKY	1,171	253	33	86.7	281	35	87.5
LOUISIANA	2,102	476	63	86.7	486	68	86.0
MAINE	608	148	19	87.3	167	21	87.5
MARYLAND	263	71	8	88.9	66	9	86.0
MASSACHUSETTS	3,830	776	115	85.2	869	149	82.8
MICHIGAN	218	45	6	85.8	48	6	86.5
MINNESOTA	645	171	16	90.5	169	19	88.5
MISSISSIPPI	565	115	17	85.3	116	19	83.5
MISSOURI	3,249	742	97	86.8	773	104	86.5
MONTANA	429	79	13	83.6	83	17	79.6
NEBRASKA	996	356	30	91.5	353	32	90.9
NEVADA	203	43	6	85.8	42	6	84.9
NEW HAMPSHIRE	700	216	21	90.2	187	21	88.8
NEW JERSEY	3,814	1,204	114	90.5	1,229	113	90.7
NEW MEXICO	541	114	16	85.7	114	17	85.5
NEW YORK	9,850	1,776	292	83.5	1,932	292	84.8
NORTH CAROLINA	1,020	261	30	88.4	240	31	87.1
NORTH DAKOTA	198	51	5	90.2	51	6	88.3
OHIO	825	234	24	89.8	266	26	90.3
OKLAHOMA	951	216	22	89.6	222	32	85.4
OREGON	254	81	8	90.6	81	12	85.6
PENNSYLVANIA	2,748	555	82	85.2	602	82	86.3
RHODE ISLAND	649	163	19	88.0	143	19	86.3
SOUTH CAROLINA	1,212	314	36	88.4	271	37	86.5
SOUTH DAKOTA	126	31	4	87.9	30	4	86.3
TENNESSEE	1,160	422	35	91.7	386	36	90.8
TEXAS	4,210	914	89	90.2	913	114	87.5
UTAH	0	0	0	0.0	0	0	0.0
VERMONT	111	23	3	85.3	23	3	85.2
VIRGINIA	1,346	298	40	86.4	299	40	86.4
WASHINGTON	1,820	452	55	87.9	446	56	87.3
WEST VIRGINIA	747	152	22	85.2	155	22	85.5
WISCONSIN	656	154	20	86.8	169	21	87.5
WYOMING	210	46	6	86.1	45	8	81.3
AMERICAN SAMCA	23	8	1	90.9	4	1	80.0
GUAM	94	19	3	85.0	22	3	86.7
N. MARIANAS	8	0	0	85.7	0	0	85.7
PUERTO RICO	1,268	353	38	89.2	317	38	87.9
PAC. TR. TERR.	28	7	1	87.3	7	1	87.3
VIRGIN ISLANDS	51	12	2	87.7	14	2	88.8
U.S. TOTALS	66,234	15,607	1,927	87.6	15,796	2,057	86.9

NOTES: 1. FLOW IN CUBIC METERS X 1000 PER DAY. 2. SHORT TONS = METRIC TONS X 0.9072.

3. SUM OF ENTRIES MAY NOV ECUAL TOTALS DUE TO ROUND-OFFS.

TABLE 22

NUMBER OF PLANTS PROJECTED FOR SECONDARY TREATMENT BY YEAR 2000 (BY TOTAL PROJECTED DESIGN FLOW)

Table 22 is a flow summary for all secondary treatment plants projected to be in operation by the year 2000. In general, this type of treatment plant includes some type of preliminary treatment process followed by a biological process (trickling filter, activated sludge, rotating biological contactor, etc.) with no additional treatment processes except disinfection. A summary is provided for each State and U.S. Territory. National totals are summarized at the bottom of the table.

In the second column the total number of projected secondary treatment plants in each State is reported. Column three represents the total wastewater treatment capacity of the plant in thousand cubic meters per day. The projected design flow for each plant was used to calculate the total treatment capacity value.

Subsequent columns provide a breakdown of the State totals into seven flow ranges. The ranges specified in the column headings are reported in thousand cubic meters per day and, in parentheses beneath the headings, in million gallons per day. Reported for each flow range are the number of plants in the range and the percentage of the total State secondary treatment capacity that is accounted for by each flow range.

Included in this summary are all secondary plants in operation in 1982 which will not be abandoned or upgraded between 1982 and 2000, primary and advanced primary plants which will be upgraded to secondary before 2000, and new secondary plants which will be constructed prior to 2000.

Some column entries will be found which list a value for the number of plants but show zero for Total Design Flow or Percent of Flow. This occurs when the design flow value is less than 0.5 or the percent value is less than 0.05; in these cases the value is rounded to zero.

DECEMBER 31, 1982
TABLE 22

1982 NEEDS SURVEY

NUMBER OF PLANTS PROJECTED FOR SECONDARY TREATMENT BY YEAR 2000

(BY TOTAL PROJECTED DESIGN FLOW)

************************ PLANTS AND PERCENT OF FLOW BY FLOW RANGE ************************

STATE	TOTAL PLANTS	TOTAL DESIGN FLOW	0-.4 (0-.10)		.401-1.9 (.11-.50)		1.901-4 (.51-1.05)		4.001-19 (1.06-5.01)		19.001-40 (5.02-10.56)		40.001-190 (10.57-50.19)		190.001+ (50.2+)	
			PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW
ALABAMA	221	1,961	49	0.6	100	5.0	26	4.1	31	14.2	5	6.0	9	32.3	1	37.4
ALASKA	119	196	87	6.5	13	5.8	6	8.5	11	44.5	2	34.5	0	0.0	0	0.0
ARIZONA	83	1,271	13	0.2	44	3.1	10	2.2	8	5.3	2	4.2	5	40.2	1	44.6
ARKANSAS	128	686	60	2.0	39	6.0	11	4.7	11	17.8	2	12.4	5	56.8	0	0.0
CALIFORNIA	218	3,348	44	0.2	60	1.7	28	2.4	45	11.9	19	16.0	19	38.1	3	29.3
COLORADO	237	886	80	1.9	83	8.4	28	8.9	37	30.2	5	17.1	4	33.0	0	0.0
CONNECTICUT	58	1,633	2	0.0	6	0.4	5	0.9	23	15.3	13	26.1	8	43.1	1	13.9
DELAWARE	4	13	1	1.1	2	13.3	0	0.0	1	85.5	0	0.0	0	0.0	0	0.0
DIST. OF COLUM.	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
FLORIDA	55	2,709	6	0.0	17	0.4	3	0.3	13	5.8	4	4.3	6	12.8	6	76.0
GEORGIA	250	1,051	72	1.5	106	9.7	35	9.2	29	24.6	5	8.1	3	46.6	0	0.0
HAWAII	34	225	2	0.2	8	5.0	8	9.5	13	54.9	3	30.1	0	0.0	0	0.0
IDAHO	105	331	37	2.5	40	11.7	11	8.4	13	35.3	3	22.4	1	19.6	0	0.0
ILLINOIS	407	237	224	20.9	169	59.6	12	14.1	2	5.2	0	0.0	0	0.0	0	0.0
INDIANA	142	545	53	2.2	58	9.8	11	6.2	13	25.2	4	20.0	3	36.4	0	0.0
IOWA	703	1,063	483	7.8	175	13.4	15	3.7	19	12.6	5	12.7	6	49.5	0	0.0
KANSAS	349	1,241	142	2.3	138	10.5	24	4.7	30	21.3	11	24.7	3	20.4	1	15.8
KENTUCKY	146	1,171	39	1.2	80	4.2	8	2.0	11	6.7	3	7.3	3	25.0	2	53.3
LOUISIANA	386	2,102	141	1.4	132	5.5	45	6.1	50	20.2	9	10.4	7	24.6	2	31.4
MAINE	155	600	47	1.6	54	8.6	17	7.6	31	39.2	2	9.6	4	33.2	0	0.0
MARYLAND	75	263	34	2.5	26	9.7	6	7.1	6	20.7	1	11.6	2	48.2	0	0.0
MASSACHUSETTS	94	3,030	6	0.0	21	0.6	16	1.0	33	8.6	6	4.3	8	21.3	4	63.8
MICHIGAN	196	218	81	9.4	94	34.9	12	14.8	8	25.4	1	15.2	0	0.0	0	0.0
MINNESOTA	399	645	239	7.1	118	16.6	19	8.0	16	20.2	4	17.2	3	30.6	0	0.0
MISSISSIPPI	221	565	106	3.3	67	10.4	22	10.9	20	28.3	5	27.2	1	19.6	0	0.0
MISSOURI	576	3,249	282	1.6	162	4.8	66	5.7	47	13.6	8	6.9	8	27.3	3	39.8
MONTANA	130	429	58	2.4	42	8.9	15	9.4	9	15.3	4	26.7	2	37.0	0	0.0
NEBRASKA	273	996	150	2.8	81	6.8	16	4.4	19	15.8	3	9.8	3	33.5	1	26.5
NEVADA	21	283	8	1.1	7	3.7	0	0.0	4	12.8	1	12.6	1	69.5	0	0.0
NEW HAMPSHIRE	93	700	19	0.6	36	5.3	10	3.8	22	27.8	2	9.0	3	25.1	1	28.1
NEW JERSEY	78	3,814	1	0.0	12	0.3	7	0.6	28	7.3	12	9.3	15	32.7	3	49.6
NEW MEXICO	66	341	27	0.8	13	2.4	11	6.6	10	15.1	4	21.3	0	0.0	1	53.5
NEW YORK	528	9,850	178	0.3	191	1.7	63	1.8	57	5.2	10	5.1	14	11.3	15	74.2
NORTH CAROLINA	254	1,020	116	1.4	73	6.8	22	6.3	29	26.6	10	27.1	4	31.5	0	0.0
NORTH DAKOTA	256	198	204	12.9	40	15.0	4	5.4	4	14.6	4	51.8	0	0.0	0	0.0
OHIO	154	825	49	1.3	66	8.5	16	5.1	19	21.1	3	8.7	0	0.0	1	55.0
OKLAHOMA	327	951	141	2.9	120	11.8	31	9.3	27	22.5	6	17.6	1	12.5	1	23.0
OREGON	69	284	30	2.4	27	10.7	6	6.6	5	20.3	0	0.0	1	59.5	0	0.0
PENNSYLVANIA	714	2,748	292	2.3	256	8.4	70	7.2	81	25.3	9	8.9	4	11.9	2	35.8
RHODE ISLAND	19	649	4	0.1	2	0.4	1	0.4	7	11.8	1	6.0	3	34.4	1	46.6
SOUTH CAROLINA	137	1,212	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SOUTH DAKOTA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TENNESSEE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TEXAS	1,582	4,210	823	3.3	445	10.0	144	9.8	129	27.5	23	15.4	16	33.0	[illegible]	[illegible]
UTAH	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
VERMONT	62	111	26	5.2	22	17.9	7	10.6	7	58.1	0	0.0	0	0.0	0	0.0
VIRGINIA	201	1,346	67	1.1	86	6.7	17	3.7	18	10.3	3	5.6	10	72.3	0	0.0
WASHINGTON	290	1,820	81	1.0	110	5.6	27	4.1	55	28.5	10	15.1	8	30.4	1	14.9
WEST VIRGINIA	402	747	141	4.4	194	25.2	43	15.9	18	16.0	4	13.5	2	24.8	0	0.0
WISCONSIN	276	656	135	4.8	95	13.7	19	7.5	21	30.2	3	13.7	3	30.0	0	0.0
WYOMING	84	210	45	2.7	20	8.8	5	6.5	13	69.3	1	12.5	0	0.0	0	0.0
AMERICAN SAMOA	1	23	0	0.0	0	0.0	0	0.0	0	0.0	1	99.9	0	0.0	0	0.0
GUAM	3	94	0	0.0	0	0.0	0	0.0	1	4.2	0	0.0	2	95.7	0	0.0
N. MARIANAS	1	0	0	0.0	1	99.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
PUERTO RICO	26	1,260	0	0.0	1	0.0	5	1.1	7	3.9	4	9.7	8	63.5	1	21.4
PAC. TR. TERR.	16	28	4	3.4	7	16.5	3	32.0	2	47.9	0	0.0	0	0.0	0	0.0
VIRGIN ISLANDS	5	51	0	0.0	1	1.7	0	0.0	3	55.6	1	42.6	0	0.0	0	0.0
U.S. TOTALS	11,754	66,134	5,146	1.4	3,881	5.4	1,015	4.3	1,170	15.7	262	11.2	220	26.9	54	34.8

NOTES: 1. FLOW RANGE VALUES IN CUBIC METERS PER DAY X 1000. (APPROXIMATE MGD IN PARENTHESES).

2. TOTAL STATE FLOW IN CUBIC METERS PER DAY X 1000.

TABLE 23

NUMBER OF NEW SECONDARY TREATMENT PLANTS TO BE BUILT BETWEEN 1982 AND 2000 (BY TOTAL PROJECTED DESIGN FLOW)

Table 23 is a flow summary for all new secondary treatment plants which will be constructed between 1982 and 2000. In general, this type of treatment plant includes some type of preliminary treatment process followed by a biological process (trickling filter, activated sludge, rotating biological contactor, etc.) with no additional treatment processes except disinfection. A summary is provided for each State and U.S. Territory. National totals are summarized at the bottom of the table.

In the second column the total number of new secondary treatment plants to be constructed in each State is reported. Column three represents the total wastewater treatment capacity of the plants in thousand cubic meters per day. The projected design flow for each plant was used to calculate the total treatment capacity value.

Subsequent columns provide a breakdown of the State totals into seven flow ranges. The ranges specified in the column headings are reported in thousand cubic meters per day and, in parentheses beneath the headings, in million gallons per day. Reported for each flow range are the number of plants in the range and the percentage of the State secondary capacity that is accounted for by each flow range.

Included in this summary are entirely new secondary plants which are planned to be constructed by the year 2000. Excluded are secondary plants that were operational in 1982 and any primary or advanced primary plants planned to be upgraded to secondary treatment.

Some column entries will be found which list a value for the number of plants but show zero for Total Design Flow or Percent of Flow. This occurs when the design flow value is less than 0.5 or the percent value is less than 0.05; in these cases the value is rounded to zero.

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TABLE 23

1982 NEEDS SURVEY

NUMBER OF NEW SECONDARY TREATMENT PLANTS TO BE BUILT BETWEEN 1982 AND 2000

(BY TOTAL PROJECTED DESIGN FLOW)

			************************				PLANTS AND PERCENT OF FLOW BY FLOW RANGE						************************			
			0-.4 (0-.10)		.401-1.9 (.11-.50)		1.901-4 (.51-1.05)		4.001-19 (1.06-5.01)		19.001-40 (5.02-10.56)		40.001-190 (10.57-50.19)		190.001+ (50.2+)	
STATE	TOTAL PLANTS	TOTAL DESIGN FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW
ALABAMA	97	864	41	1.2	42	3.7	5	1.0	8	8.2	0	0.0	0	0.0	1	84.9
ALASKA	76	88	63	10.4	6	5.5	1	2.4	5	38.6	1	42.9	0	0.0	0	0.0
ARIZONA	46	66	8	3.6	33	43.7	2	7.6	3	44.9	0	0.0	0	0.0	0	0.0
ARKANSAS	34	8	31	67.5	3	32.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
CALIFORNIA	60	196	30	3.4	20	9.8	4	5.5	3	9.6	2	30.9	1	40.5	0	0.0
COLORADO	15	88	9	1.6	1	0.6	2	4.7	1	5.6	1	34.0	1	53.2	0	0.0
CONNECTICUT	5	50	1	0.1	1	1.3	0	0.0	2	38.3	1	60.1	0	0.0	0	0.0
DELAWARE	2	72	1	1.3	0	0.0	0	0.0	1	98.6	0	0.0	0	0.0	0	0.0
DIST. OF COLUM.	0	6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
FLORIDA	25	147	5	0.6	14	6.9	0	0.0	4	35.2	1	18.5	1	38.6	0	0.0
GEORGIA	73	70	37	11.8	28	26.9	6	21.6	2	39.5	0	0.0	0	0.0	0	0.0
HAWAII	20	71	2	0.6	5	9.9	6	22.6	7	66.7	0	0.0	0	0.0	0	0.0
IDAHO	15	14	9	12.0	4	27.9	1	17.7	1	42.2	0	0.0	0	0.0	0	0.0
ILLINOIS	135	36	114	56.4	20	38.0	1	5.4	0	0.0	0	0.0	0	0.0	0	0.0
INDIANA	47	15	37	48.4	10	51.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
IOWA	160	21	156	86.0	4	13.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
KANSAS	16	53	11	2.7	3	3.9	0	0.0	0	0.0	2	93.3	0	0.0	0	0.0
KENTUCKY	80	424	52	2.8	24	4.1	1	0.5	0	0.0	1	6.0	1	10.6	1	75.7
LOUISIANA	167	333	97	3.7	48	7.5	9	4.2	9	14.9	2	7.4	1	24.0	1	37.2
MAINE	73	39	39	14.0	28	41.4	3	16.2	3	28.2	0	0.0	0	0.0	0	0.0
MARYLAND	24	10	19	32.6	4	46.3	1	21.0	0	0.0	0	0.0	0	0.0	0	0.0
MASSACHUSETTS	24	100	4	0.5	9	10.9	2	4.6	8	56.6	1	27.1	0	0.0	0	0.0
MICHIGAN	87	30	49	24.0	34	56.6	4	19.2	0	0.0	0	0.0	0	0.0	0	0.0
MINNESOTA	64	17	54	49.4	9	39.5	1	11.0	0	0.0	0	0.0	0	0.0	0	0.0
MISSISSIPPI	93	36	72	18.9	16	21.4	1	6.7	4	52.8	0	0.0	0	0.0	0	0.0
MISSOURI	182	505	146	4.3	20	3.5	5	2.5	7	14.9	1	4.9	3	69.6	0	0.0
MONTANA	12	11	10	16.7	1	4.1	0	0.0	1	79.1	0	0.0	0	0.0	0	0.0
NEBRASKA	7	0	7	99.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NEVADA	9	4	6	35.4	3	64.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NEW HAMPSHIRE	41	49	14	6.7	20	35.7	3	16.3	4	41.2	0	0.0	0	0.0	0	0.0
NEW JERSEY	11	170	0	0.0	4	2.5	1	1.7	2	10.1	3	54.1	1	31.4	0	0.0
NEW MEXICO	26	13	20	24.1	3	13.9	3	61.8	0	0.0	0	0.0	0	0.0	0	0.0
NEW YORK	317	1,422	153	2.3	123	6.8	17	3.3	15	8.3	5	9.4	2	8.4	2	61.1
NORTH CAROLINA	83	189	57	4.1	17	7.1	2	3.0	5	22.8	0	0.0	2	62.0	0	0.0
NORTH DAKOTA	9	0	9	99.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
OHIO	41	15	31	42.9	10	57.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
OKLAHOMA	48	50	37	12.5	7	10.0	1	7.4	2	23.4	1	46.4	0	0.0	0	0.0
OREGON	18	4	15	51.5	3	48.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
PENNSYLVANIA	479	463	257	12.2	172	30.9	27	15.7	22	36.7	1	4.2	0	0.0	0	0.0
RHODE ISLAND	5	15	3	3.7	0	0.0	0	0.0	2	96.2	0	0.0	0	0.0	0	0.0
SOUTH CAROLINA	47	129	18	2.5	21	16.3	2	3.5	4	30.5	2	46.9	0	0.0	0	0.0
SOUTH DAKOTA	12	3	9	30.4	3	69.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TENNESSEE	32	55	15	6.5	12	20.5	2	10.9	2	20.6	1	41.2	0	0.0	0	0.0
TEXAS	830	547	647	18.9	148	21.5	21	10.6	11	21.4	1	4.1	2	23.1	0	0.0
UTAH	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
VERMONT	14	5	10	36.3	4	63.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
VIRGINIA	83	347	41	2.4	33	9.0	3	2.4	2	6.5	1	6.5	3	73.0	0	0.0
WASHINGTON	103	142	52	8.1	42	25.9	4	6.2	4	27.7	0	0.0	1	31.9	0	0.0
WEST VIRGINIA	308	298	126	9.7	147	45.4	28	25.2	6	11.9	1	7.6	0	0.0	0	0.0
WISCONSIN	60	46	42	13.8	15	29.0	1	6.3	2	50.6	0	0.0	0	0.0	0	0.0
WYOMING	11	17	9	4.0	1	3.0	0	0.0	1	92.0	0	0.0	0	0.0	0	0.0
AMERICAN SAMOA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
GUAM	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
N. MARIANAS	1	0	0	0.0	1	99.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
PUERTO RICO	2	41	0	0.0	0	0.0	1	9.0	0	0.0	1	90.9	0	0.0	0	0.0
PAC. TR. TERR.	11	9	4	9.7	5	26.3	1	22.0	1	41.8	0	0.0	0	0.0	0	0.0
VIRGIN ISLANDS	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
U.S. TOTALS	4,240	7,628	2,679	6.4	1,181	13.0	172	6.0	154	17.0	30	10.6	19	18.7	5	27.8

NOTES: 1. FLOW RANGE VALUES IN CUBIC METERS PER DAY X 1000. (APPROXIMATE MGD IN PARENTHESES).

2. TOTAL STATE FLOW IN CUBIC METERS PER DAY X 1000.

TABLE 24

DOLLAR NEEDS FOR CONSTRUCTION OF NEW SECONDARY TREATMENT FACILITIES, BY PLANT SIZE

Table 24 summarizes the projected cost, reported as January 1982 dollars, for the construction of new secondary treatment plants to be built between 1982 and 2000. Table 24 is a direct extension of Table 23.

The summary indicates a total dollar need per State for new secondary facilities. The State totals are broken down into dollar needs by flow range. The dollar needs for each individual plant are included in the total for the flow range shown for that plant's projected design capacity.

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TABLE 24

1982 NEEDS SURVEY

DOLLAR NEEDS FOR CONSTRUCTION OF NEW SECONDARY TREATMENT FACILITIES, BY PLANT SIZE

(THOUSANDS OF 1982 DOLLARS)

CUBIC METERS PER DAY X 1000: (MILLION GALLONS PER DAY)			************************** TOTAL PROJECTED DESIGN FLOW **************************						
			0-.40 (0-.10)	.401-1.9 (.11-.50)	1.901-4.0 (.51-1.05)	4.001-19 (1.06-5.01)	19.001-40 (5.02-10.56)	40.001-190 (10.57-50.19)	190.001+ (50.2+)
STATE	# OF PLANTS	STATE NEEDS	NEEDS	NEEDS	NEEDS	NEEDS	NEEDS	NEEDS	NEEDS
ALABAMA	97	66,770	10,955	23,889	11,088	20,577	0	0	261
ALASKA	76	87,207	32,152	11,036	0	25,654	18,365	0	0
ARIZONA	46	46,554	2,431	23,258	3,733	17,132	0	0	0
ARKANSAS	34	6,356	5,671	685	0	0	0	0	0
CALIFORNIA	60	222,951	10,162	17,543	12,966	14,873	24,255	143,152	0
COLORADO	15	10,018	1,719	504	3,211	3,534	0	1,050	0
CONNECTICUT	5	31,394	307	307	0	11,430	19,350	0	0
DELAWARE	2	7,836	384	0	0	7,452	0	0	0
.IST. OF COLUM.	0	0	0	0	0	0	0	0	0
FLORIDA	25	122,641	1,049	8,424	0	33,637	26,390	53,141	0
GEORGIA	73	48,324	7,566	11,849	10,764	18,145	0	0	0
HAWAII	26	90,890	830	8,691	25,056	56,313	0	0	0
IDAHO	15	9,030	2,706	3,072	2,269	983	0	0	0
ILLINOIS	135	57,578	38,239	16,717	2,622	0	0	0	0
INDIANA	47	23,257	13,244	10,013	0	0	0	0	0
IOWA	160	35,288	32,857	2,431	0	0	0	0	0
KANSAS	16	25,600	1,462	926	0	0	23,212	0	0
KENTUCKY	80	117,620	15,120	15,410	941	0	8,402	22,511	55,236
LOUISIANA	167	277,020	19,177	24,960	16,676	40,681	17,475	61,437	96,614
MAINE	73	54,516	18,868	31,956	3,692	0	0	0	0
MARYLAND	24	11,356	5,476	5,880	0	0	0	0	0
MASSACHUSETTS	24	89,523	896	12,437	4,967	59,414	11,809	0	0
MICHIGAN	87	53,792	15,467	32,540	5,785	0	0	0	0
MINNESOTA	64	28,556	16,333	12,223	0	0	0	0	0
MISSISSIPPI	93	34,694	10,884	6,519	798	16,493	0	0	0
MISSOURI	182	295,050	25,890	10,067	6,090	54,284	19,879	178,840	0
MONTANA	12	8,164	2,129	432	0	5,603	0	0	0
NEBRASKA	7	671	671	0	0	0	0	0	0
NEVADA	9	5,565	2,134	3,431	0	0	0	0	0
NEW HAMPSHIRE	41	77,392	12,592	34,467	10,969	19,364	0	0	0
NEW JERSEY	11	205,344	0	5,859	3,429	11,700	85,400	98,956	0
NEW MEXICO	26	15,636	3,814	1,785	10,037	0	0	0	0
NEW YORK	317	1,333,519	43,768	92,664	40,832	108,436	48,766	56,077	942,976
NORTH CAROLINA	83	90,538	9,316	13,495	3,309	19,355	0	45,063	0
NORTH DAKOTA	9	367	367	0	0	0	0	0	0
OHIO	41	17,127	9,451	7,676	0	0	0	0	0
OKLAHOMA	48	25,590	6,193	3,042	0	2,922	13,433	0	0
OREGON	18	7,158	4,158	3,000	0	0	0	0	0
PENNSYLVANIA	479	447,368	72,123	146,046	78,339	141,671	9,189	0	0
RHODE ISLAND	5	15,270	1,315	0	0	13,955	0	0	0
SOUTH CAROLINA	47	48,570	3,714	13,887	4,374	7,645	18,950	0	0
SOUTH DAKOTA	12	3,671	1,763	1,908	0	0	0	0	0
TENNESSEE	32	22,753	5,041	9,789	4,477	3,063	383	0	0
TEXAS	830	382,822	131,748	100,887	37,696	65,075	6,668	40,748	0
UTAH	0	0	0	0	0	0	0	0	0
VERMONT	14	7,677	3,227	4,450	0	0	0	0	0
VIRGINIA	83	96,063	10,836	29,827	5,970	11,153	10,430	27,847	0
WASHINGTON	103	93,645	16,180	42,250	10,662	19,143	0	5,410	0
WEST VIRGINIA	308	269,275	40,785	149,940	59,017	19,533	0	0	0
WISCONSIN	60	45,106	10,278	14,154	1,838	18,836	0	0	0
WYOMING	11	1,286	994	292	0	0	0	0	0
AMERICAN SAMOA	0	0	0	0	0	0	0	0	0
GUAM	0	0	0	0	0	0	0	0	0
N. MARIANAS	1	1,520	0	1,520	0	0	0	0	0
PUERTO RICO	2	2,936	0	0	2,936	0	0	0	0
PAC. TR. TERR.	11	19,366	3,985	5,107	1,659	8,615	0	0	0
VIRGIN ISLANDS	0	0	0	0	0	0	0	0	0
U.S. TOTALS	4,240	5,098,220	686,427	977,245	386,202	856,671	362,356	734,232	1,095,087

TABLE 25

NUMBER OF FACILITIES AND REASONS FOR TREATMENT MORE STRINGENT THAN SECONDARY FACILITIES IN THE YEAR 2000

Table 25 is a summary of the number of treatment facilities required to have treatment levels more stringent than secondary. This summary includes all those plants existent in 1982 treating wastes to these levels plus those required to be constructed or upgraded to this level between 1982 and 2000.

The second column lists by State the total number of treatment plants that will be operational in 2000. The third column lists the number of plants that will have to provide treatment more stringent than secondary. The remaining columns describe the reasons these plants must provide treatment more stringent than secondary. The headings for these remaining columns are self-explanatory.

It should be noted that more than one reason is possible for any single treatment plant being required to provide treatment more stringent than secondary. Therefore, the total number of all reasons does not equal the number of more stringent than secondary plants for all States.

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TABLE 23

1982 NEEDS SURVEY

NUMBER OF FACILITIES AND REASONS FOR TREATMENT MORE STRINGENT THAN SECONDARY

FACILITIES IN THE YEAR 2000

STATE	TOTAL NUMBER OF TREATMENT FACILITIES	NUMBER REQUIRING MORE STRINGENT TREATMENT	==========REASONS FOR TREATMENT LEVEL BEING MORE STRINGENT THAN SECONDARY========== EPA-APPROVED WATER QUALITY PLAN	STATE COURT ORDER	FEDERAL COURT ORDER	DISCHARGE PERMIT CONDITIONS	STATE OR FEDERAL ENFORCEMENT ORDER	VOLUNTARY COMPLIANCE	STATE CERTIFICATE	OTHER
ALABAMA	342	119	1	0	0	61	0	0	57	0
ALASKA	126	3	1	0	0	2	0	0	0	0
ARIZONA	170	5	2	0	0	2	0	0	0	1
ARKANSAS	484	345	3	0	0	49	1	0	292	0
CALIFORNIA	917	89	5	0	0	76	1	1	6	0
COLORADO	291	24	14	0	0	6	0	0	4	0
CONNECTICUT	103	32	6	2	0	16	1	0	7	0
DELAWARE	22	14	2	0	0	11	0	0	1	0
DIST. OF COLUM.	1	1	0	0	0	1	0	0	0	0
FLORIDA	319	216	10	0	0	61	0	0	127	18
GEORGIA	428	171	29	0	0	65	1	1	74	1
HAWAII	44	3	2	0	0	1	0	0	0	0
IDAHO	205	14	4	0	0	8	0	0	2	0
ILLINOIS	857	440	2	6	3	313	0	0	114	2
INDIANA	531	387	45	0	1	267	47	0	24	3
IOWA	813	104	6	0	0	20	1	0	76	1
KANSAS	583	7	0	0	0	2	0	0	5	0
KENTUCKY	385	237	13	1	0	81	0	0	142	0
LOUISIANA	444	40	1	0	0	14	0	0	25	0
MAINE	206	16	0	2	0	2	0	0	12	0
MARYLAND	281	199	120	0	0	75	3	0	1	0
MASSACHUSETTS	148	42	15	0	0	15	2	0	10	0
MICHIGAN	486	200	25	11	0	140	9	0	15	0
MINNESOTA	577	126	20	0	0	100	0	0	6	0
MISSISSIPPI	504	276	4	1	0	63	1	0	205	2
MISSOURI	632	41	0	0	0	20	1	0	20	0
MONTANA	181	1	0	0	0	0	0	0	1	0
NEBRASKA	465	0	0	0	0	0	0	0	0	0
NEVADA	71	9	3	0	0	5	0	0	1	0
NEW HAMPSHIRE	142	12	1	0	0	5	1	0	5	0
NEW JERSEY	154	74	2	9	16	8	28	1	10	0
NEW MEXICO	160	10	0	0	0	3	0	1	6	0
NEW YORK	864	308	9	5	5	26	23	4	235	1
NORTH CAROLINA	632	360	28	29	0	80	0	0	223	0
NORTH DAKOTA	295	3	0	0	0	3	0	0	0	0
OHIO	790	633	152	11	2	428	5	1	33	1
OKLAHOMA	504	36	9	0	0	15	0	0	12	0
OREGON	231	126	75	0	0	51	0	0	0	0
PENNSYLVANIA	1,241	519	65	46	9	277	27	0	94	1
RHODE ISLAND	25	6	2	0	0	2	0	0	2	0
SOUTH CAROLINA	285	119	17	0	4	37	1	0	57	3
SOUTH DAKOTA	277	20	1	0	0	17	0	0	2	0
TENNESSEE	285	192	21	0	1	101	1	0	65	3
TEXAS	2,221	416	67	0	0	243	0	0	85	1
UTAH	178	147	2	0	0	131	0	0	12	2
VERMONT	102	35	1	0	0	15	0	0	19	0
VIRGINIA	307	100	57	0	0	28	1	0	13	1
WASHINGTON	337	8	1	0	0	4	2	1	0	0
WEST VIRGINIA	499	94	51	0	0	29	2	0	12	0
WISCONSIN	623	234	7	0	0	121	3	0	99	4
WYOMING	112	4	1	0	0	0	0	0	3	0
AMERICAN SAMOA	1	0	0	0	0	0	0	0	0	0
GUAM	6	2	2	0	0	0	0	0	0	0
N. MARIANAS	3	2	0	0	0	0	0	0	2	0
PUERTO RICO	31	5	0	0	0	1	0	2	2	0
PAC. TR. TERR.	21	3	0	0	0	0	0	0	3	0
VIRGIN ISLANDS	5	0	0	0	0	0	0	0	0	0
U.S. TOTALS	21,827	6,629	926	123	41	3,101	162	12	2,219	45

TABLE 26

POPULATIONS SERVED BY ADVANCED SECONDARY TREATMENT PRESENT AND PROJECTED, RESIDENT AND NONRESIDENT

Table 26 summarizes the 1980 populations served and the 2000 populations projected to be served by facilities designed to provide advanced secondary treatment. The treatment levels attained by advanced secondary plants are defined in terms of the effluent BOD_5 concentration and/or the removal of the nutrients phosphorus (as PO_4) and/or ammonia (NH_3). A plant is considered to be advanced secondary in design if it is capable of consistently producing an effluent with a BOD_5 concentration in the range of 24 to 10 mg/l and/or it has specific processes which remove phosphorus and/or ammonia in excess of the amounts normally removed by secondary treatment.

The 2000 total State population values reported are from estimates provided by BEA. The 1980 population values are based on those reported in the April 1981 Report of the Bureau of Census. The Percent Served is a function of the residents receiving treatment in relation to the total State population estimated by BEA.

The total population within the service area of an authority is the sum of persons receiving treatment and not receiving treatment. Those persons not receiving treatment reside in the service area but do not contribute to the treatment facility because they are not on a sewer system.

Resident populations are permanent residents in the service area of a sewerage authority. Nonresident populations include commuters living in one area and working in another, as well as all transients, tourists, and seasonal residents.

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TABLE 26

1982 NEEDS SURVEY

POPULATIONS SERVED BY ADVANCED SECONDARY TREATMENT PRESENT AND PROJECTED, RESIDENT AND NONRESIDENT (POPULATION IN THOUSANDS)

STATE	*** POPULATION ***		**** RECEIVING TREATMENT *****				*** NOT RECEIVING TREATMENT **				** PERCENT *** SERVED		** TREATMENT ** PLANTS	
	1980 TOTAL	2000 TOTAL	1980 RES.	2000 RES.	1980 NONRES	2000 NONRES	1980 RES.	2000 RES.	1980 NONRES	2000 NONRES	1980	2000	1980	2000
ALABAMA	3,890	4,140	480	1,427	7	66	103	17	0	0	11.5	34.4	21	116
ALASKA	400	694	7	26	0	1	1	0	0	0	1.7	3.8	3	3
ARIZONA	2,718	4,357	12	2	0	1	0	0	0	0	0.4	0.0	3	2
ARKANSAS	2,286	2,970	226	1,059	15	37	7	5	0	0	9.8	35.6	42	315
CALIFORNIA	23,669	26,786	4,106	5,935	116	197	249	10	0	0	17.6	22.1	62	63
COLORADO	2,889	4,371	1,333	2,110	109	426	3	0	0	0	46.1	48.2	15	22
CONNECTICUT	3,108	3,902	116	645	16	9	118	139	0	0	3.7	16.5	21	25
DELAWARE	595	841	385	795	40	357	35	20	0	0	64.8	94.6	6	13
DIST. OF COLUM.	638	694	744	0	1,898	0	0	0	0	0	116.6	0.0	1	0
FLORIDA	9,740	15,849	1,855	2,740	296	440	209	64	0	1	19.0	18.2	102	160
GEORGIA	5,464	7,053	520	3,919	15	154	147	162	0	0	9.5	55.5	43	167
HAWAII	965	1,366	28	8	2	4	0	0	0	0	2.9	0.6	6	1
IDAHO	944	1,183	81	255	0	8	27	7	0	0	8.6	21.5	4	9
ILLINOIS	11,418	12,358	7,982	11,552	32	42	94	12	0	0	69.9	93.4	320	430
INDIANA	5,490	6,059	2,564	4,111	235	469	167	22	15	0	46.7	67.8	160	384
IOWA	2,913	3,101	139	1,133	1	64	3	0	0	0	4.7	36.5	19	104
KANSAS	2,363	2,642	79	164	0	0	0	0	0	0	3.3	6.2	4	6
KENTUCKY	3,661	4,224	388	1,363	19	52	62	162	0	0	10.5	32.2	52	234
LOUISIANA	4,204	4,880	143	560	26	6	2	0	0	0	3.4	11.4	12	35
MAINE	1,125	1,222	15	10	0	1	3	4	0	0	1.3	0.8	2	10
MARYLAND	4,216	5,583	1,542	3,072	15	55	253	52	0	0	36.5	55.0	51	108
MASSACHUSETTS	5,737	6,736	379	774	2	27	147	146	2	3	6.6	11.4	16	29
MICHIGAN	9,258	10,314	5,622	7,395	77	145	530	227	0	4	60.7	71.7	122	180
MINNESOTA	4,077	4,505	247	2,435	0	21	6	43	0	0	6.0	54.0	23	84
MISSISSIPPI	2,521	2,740	50	1,260	2	6	7	72	0	0	2.0	45.9	20	272
MISSOURI	4,917	5,379	142	357	12	24	56	0	0	0	2.9	6.6	12	40
MONTANA	787	938	10	32	1	1	0	0	0	0	1.3	3.4	1	1
NEBRASKA	1,570	1,734	0	0	0	0	0	0	0	0	0.0	0.0	0	0
NEVADA	799	1,408	431	703	71	83	6	0	0	0	53.9	49.9	8	5
NEW HAMPSHIRE	921	1,306	1	55	0	1	0	12	0	0	0.1	4.2	1	7
NEW JERSEY	7,364	9,022	686	1,607	75	159	61	70	0	0	9.3	17.8	22	53
NEW MEXICO	1,300	1,781	6	99	12	21	0	34	0	0	0.5	5.6	3	8
NEW YORK	17,577	19,683	1,991	4,163	140	729	447	217	5	4	11.3	21.1	183	203
NORTH CAROLINA	5,874	7,419	663	1,662	2	132	252	353	0	0	11.3	22.4	48	225
NORTH DAKOTA	653	690	0	0	0	0	0	0	0	0	0.0	0.0	0	0
OHIO	10,797	12,237	3,981	8,638	22	50	253	22	0	0	36.8	70.5	294	533
OKLAHOMA	3,025	3,702	306	735	0	0	10	0	0	0	10.1	19.8	19	29
OREGON	2,633	3,209	938	2,582	18	50	232	0	0	0	35.6	80.4	97	119
PENNSYLVANIA	11,867	12,854	2,587	7,416	157	803	461	146	5	0	21.8	57.6	248	487
RHODE ISLAND	947	1,084	10	211	0	4	12	93	0	0	1.1	19.5	2	6
SOUTH CAROLINA	3,119	3,700	261	832	87	104	94	38	0	0	8.3	22.4	20	112
SOUTH DAKOTA	690	730	36	293	3	1	0	0	0	0	5.2	40.2	5	15
TENNESSEE	4,591	5,573	632	2,655	36	131	360	215	0	0	13.7	47.6	44	181
TEXAS	14,228	21,000	4,945	9,798	56	180	232	2	0	0	34.7	46.6	245	392
UTAH	1,461	1,963	146	1,797	7	308	0	0	0	0	10.0	91.5	8	137
VERMONT	511	607	17	187	5	34	3	27	3	1	3.3	30.9	8	32
VIRGINIA	5,346	6,755	1,183	1,538	209	294	142	27	0	0	22.1	22.7	52	74
WASHINGTON	4,130	4,859	430	71	44	35	224	0	2	0	10.4	1.4	4	5
WEST VIRGINIA	1,950	2,101	164	438	0	2	41	15	0	0	8.4	20.8	17	82
WISCONSIN	4,705	5,553	2,172	3,687	44	86	148	22	2	0	46.1	66.4	137	229
WYOMING	450	484	0	176	0	0	0	0	0	0	0.0	36.4	0	4
AMERICAN SAMOA	33	48	0	0	0	0	0	0	0	0	0.0	0.0	0	0
GUAM	110	275	0	0	0	0	0	0	0	0	0.0	0.0	0	0
N. MARIANAS	17	33	0	28	0	2	0	0	0	0	0.0	87.1	0	2
PUERTO RICO	3,197	4,700	0	105	0	0	0	26	0	0	0.0	2.2	0	5
PAC. TR. TERR.	118	183	1	28	0	2	0	0	0	0	0.8	15.3	1	3
VIRGIN ISLANDS	99	116	0	0	0	0	0	0	0	0	0.0	0.0	0	0
U.S. TOTAL	230,075	278,888	50,853	102,671	3,939	5,559	5,236	2,500	37	19	22.1	36.8	2,529	5,849

TABLE 27

PLANT LOADINGS, REMOVAL EFFICIENCIES, AND DISCHARGE RATES FOR FACILITIES IN OPERATION IN 1982 FACILITIES DESIGNED TO PROVIDE ADVANCED SECONDARY TREATMENT

Table 27 summarizes the performance of all treatment facilities designed to provide advanced secondary treatment. Information is provided for all States and U.S. Territories with a national total at the bottom of the table.

This table provides an estimate of the total quantity of various pollutants accepted by treatment plants within the State and the total quantity of these same pollutants in the effluent. Quantities are given in metric tons per day for BOD_5 and Solids. Information is also provided on nutrient removal capabilities.

Plants with Removal Capability are facilities with a specific requirement to remove the listed nutrient. For instance, some phosphorus is removed in all treatment plants. However, only plants specifically designed to remove phosphorus are reported in this category. Reported for each nutrient are the total number of plants with this removal capability and the total average daily flow received by these plants. Also given is the percentage of the total State flow the plants represent.

These data were derived from the daily average flow and the daily average influent and effluent pollutant concentrations. The averages are based on the actual performances of each individual treatment plant during the most recent 12 month period for which information could be obtained. The values calculated for each plant are summed into State and national totals. The main source of information for flow and concentration values was the self-monitoring reports submitted by every facility with an NPDES permit.

Table 27 is an extension of Table 26. A summary of the projected year 2000 performance of all advanced secondary facilities is given in Table 28.

Total Flow is the sum of the actual average daily flows treated by all facilities within the State designed to provide advanced secondary treatment.

All flows are reported in thousand cubic meters per day.

Some States may show influent and/or effluent values of BOD_5 or Solids equal to zero, but still have a percent removal calculated. This is due to the influent and/or effluent value being less than 0.5 metric tons per day in which case the value is rounded to zero.

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TABLE 27

1982 NEEDS SURVEY

PLANT LOADINGS, REMOVAL EFFICIENCIES AND DISCHARGE RATES FOR FACILITIES IN OPERATION IN 1982 FACILITIES DESIGNED TO PROVIDE ADVANCED SECONDARY TREATMENT (METRIC TONS PER DAY)

		******** REMOVAL EFFICIENCIES ********						************** PLANTS WITH REMOVAL CAPABILITY **************								
		****** BOD5			*********** SOLIDS *****			*** PHOSPHORUS ***			** NH3 NITROGEN **			**** TOTAL N *****		
STATE	ACTUAL FLOW	INF.	EFF.	% REM.	INF.	EFF.	% REM.	# PLANTS	FLOW	% TOT. FLOW	# PLANTS	FLOW	% TOT. FLOW	# PLANTS	FLOW	% TOT. FLOW
ALABAMA	339	51	4	92.2	55	6	88.5	0	0	0.0	15	326	98.9	0	0	0.0
ALASKA	7	1	0	86.9	1	0	85.3	0	0	0.0	0	0	0.0	0	0	0.0
ARIZONA	4	1	0	78.0	1	0	72.7	0	0	0.0	0	0	0.0	0	0	0.0
ARKANSAS	106	23	1	93.7	21	2	87.7	0	0	0.0	0	0	0.0	0	0	0.0
CALIFORNIA	1,903	560	21	96.1	593	25	95.7	5	315	16.5	8	623	32.7	0	0	0.0
COLORADO	663	140	11	91.7	160	11	92.6	5	6	0.9	6	29	4.4	0	0	0.0
CONNECTICUT	72	13	1	89.8	16	1	93.6	3	26	36.1	1	0	0.9	0	0	0.0
DELAWARE	275	43	7	83.1	49	14	70.8	1	1	0.5	1	3	1.3	0	0	0.0
DIST. OF COLUM.	1,169	174	2	98.6	180	10	94.4	1	1,169	100.0	1	1,169	100.0	0	0	0.0
FLORIDA	964	163	12	92.3	170	20	87.7	8	120	12.5	6	132	13.7	0	0	0.0
GEORGIA	312	61	8	85.6	65	9	83.6	10	60	19.3	21	166	53.4	0	0	0.0
HAWAII	15	3	0	93.2	2	0	92.4	0	0	0.0	0	0	0.0	0	0	0.0
IDAHO	70	16	0	97.3	18	0	96.3	0	0	0.0	0	0	0.0	0	0	0.0
ILLINOIS	6,702	925	59	93.5	1,222	65	94.6	29	245	3.6	40	4,895	73.0	0	0	0.0
INDIANA	2,076	339	29	91.1	443	47	89.2	55	1,123	54.1	15	1,057	50.8	0	0	0.0
IOWA	69	25	1	95.2	27	1	94.4	0	0	0.0	15	60	86.5	0	0	0.0
KANSAS	42	8	0	91.3	9	0	95.1	0	0	0.0	0	0	0.0	0	0	0.0
KENTUCKY	234	40	3	91.6	37	4	89.1	0	0	0.0	42	182	77.8	0	0	0.0
LOUISIANA	57	13	0	94.2	11	1	83.5	0	0	0.0	0	0	0.0	0	0	0.0
MAINE	12	2	0	75.0	2	0	82.6	1	0	3.5	0	0	0.0	0	0	0.0
MARYLAND	831	141	38	72.8	151	26	82.4	5	686	82.5	3	4	0.5	0	0	0.0
MASSACHUSETTS	280	38	4	87.0	54	4	91.7	3	13	4.9	3	59	21.3	0	0	0.0
MICHIGAN	4,312	1,188	78	93.4	2,217	113	94.8	114	4,299	99.6	14	384	8.9	0	0	0.0
MINNESOTA	195	48	1	96.2	32	1	95.8	18	172	88.6	1	13	6.7	0	0	0.0
MISSISSIPPI	34	5	0	91.2	5	0	85.3	1	0	0.4	9	25	73.4	0	0	0.0
MISSOURI	128	31	0	98.1	25	0	96.9	0	0	0.0	1	96	74.7	0	0	0.0
MONTANA	4	0	0	85.0	0	0	90.6	0	0	0.0	0	0	0.0	0	0	0.0
NEBRASKA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
NEVADA	271	54	4	92.6	59	3	94.6	2	242	89.0	1	90	33.4	0	0	0.0
NEW HAMPSHIRE	0	0	0	89.4	0	0	89.4	0	0	0.0	0	0	0.0	0	0	0.0
NEW JERSEY	1,204	254	17	92.9	238	22	90.6	3	14	1.1	1	10	0.8	0	0	0.0
NEW MEXICO	3	0	0	84.7	1	0	88.7	1	2	67.0	0	0	0.0	0	0	0.0
NEW YORK	1,374	237	31	86.6	238	29	87.7	24	735	53.5	8	74	5.3	0	0	0.0
NORTH CAROLINA	456	95	8	91.2	80	12	83.8	2	5	1.2	18	183	40.1	0	0	0.0
NORTH DAKOTA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
OHIO	2,709	470	59	87.2	734	70	90.3	45	950	35.0	68	399	14.7	0	0	0.0
OKLAHOMA	120	24	2	90.6	27	2	90.1	4	66	54.8	5	70	57.9	0	0	0.0
OREGON	722	122	10	91.1	136	10	92.5	1	51	7.1	1	30	4.2	0	0	0.0
PENNSYLVANIA	1,417	288	32	88.6	317	53	83.0	82	597	42.1	117	480	33.8	0	0	0.0
RHODE ISLAND	5	1	0	81.6	1	0	84.3	1	3	62.1	0	0	0.0	0	0	0.0
SOUTH CAROLINA	157	40	4	87.9	29	4	85.2	1	4	3.1	15	144	91.5	0	0	0.0
SOUTH DAKOTA	16	3	0	97.0	3	0	96.3	0	0	0.0	2	10	61.5	0	0	0.0
TENNESSEE	564	103	26	73.8	116	30	73.5	0	0	0.0	32	522	92.7	0	0	0.0
TEXAS	2,793	667	51	92.3	727	89	87.7	2	24	0.8	43	124	4.4	0	0	0.0
UTAH	104	14	2	85.4	16	1	90.0	0	0	0.0	0	0	0.0	0	0	0.0
VERMONT	15	2	0	94.5	2	0	94.6	6	4	28.0	0	0	0.0	0	0	0.0
VIRGINIA	633	106	6	93.6	100	8	92.0	6	112	17.7	2	115	18.2	0	0	0.0
WASHINGTON	288	51	2	94.9	57	2	96.1	1	122	42.2	1	1	0.4	0	0	0.0
WEST VIRGINIA	81	17	1	89.8	17	2	86.2	1	4	5.9	4	13	17.0	0	0	0.0
WISCONSIN	1,642	407	24	93.9	417	24	94.0	61	1,558	94.9	41	131	7.9	0	0	0.0
WYOMING	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
AMERICAN SAMOA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
GUAM	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
N. MARIANAS	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
PUERTO RICO	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
PAC. TR. TERR.	0	0	0	0.0	0	0	30.7	0	0	0.0	0	0	0.0	0	0	0.0
VIRGIN ISLANDS	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
U.S. TOTALS	35,494	7,030	582	91.7	8,985	742	91.6	505	12,745	35.9	561	11,636	32.7	0	0	0.0

NOTES: 1. FLOWS IN CUBIC METERS X 1000 2. METRIC TONS X .9072 = SHORT TONS

3. SUM OF ENTRIES MAY NOT EQUAL TOTALS DUE TO ROUND-OFFS

4. FACILITIES WITH ZERO DISCHARGE OR RAW DISCHARGE ARE NOT INCLUDED

TABLE 28

PLANT LOADINGS, REMOVAL EFFICIENCIES, AND DISCHARGE RATES FOR FACILITIES TO BE IN OPERATION IN 2000 FACILITIES DESIGNED TO PROVIDE ADVANCED SECONDARY TREATMENT

Table 28 summarizes the expected performance in the year 2000 of all treatment facilities designed to provide advanced secondary treatment. Information is provided for all States and U.S. Territories with a national total at the bottom of the table.

This table provides an estimate of the total quantity of various pollutants that will be received by treatment plants within the State and the total quantity of these same pollutants that will be in the effluent. Quantities are given in metric tons per day for BOD_5 and Solids. Information is also provided on nutrient removal capabilities.

Plants with Removal Capability are facilities with a specific requirement to remove the listed nutrient. For instance, some phosphorus is removed in all treatment plants. However, only plants specifically designed to remove phosphorus are reported in this category. Reported for each nutrient are the total number of plants with this removal capability and the total average daily flow received by these plants. Also given is the percentage of the total State flow the plants represent.

These data were derived from the daily average flow and the daily average influent and effluent pollutant concentrations. The averages are based on the predicted year 2000 situation. The values calculated for each plant are summed into State and national totals.

Table 28 is an extension of Tables 26 and 27.

Total Flow is the sum of the average daily flows to be treated in the year 2000 by all facilities within the State that will be designed to provide advanced secondary treatment.

All flows are reported in thousand cubic meters per day.

Some States may show influent and/or effluent values of BOD_5 or Solids equal to zero, but still have a percent removal calculated. This is due to the influent and/or effluent value being less than 0.5 metric tons per day in which case the value is rounded to zero.

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TABLE 28

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PLANT LOADINGS, REMOVAL EFFICIENCIES AND DISCHARGE RATES
FOR FACILITIES TO BE IN OPERATION IN 2000
FACILITIES DESIGNED TO PROVIDE ADVANCED SECONDARY TREATMENT
(METRIC TONS PER DAY)

		******** REMOVAL EFFICIENCIES ********						************** PLANTS WITH REMOVAL CAPABILITY **************								
		****** BOD5		*********** SOLIDS *****				*** PHOSPHORUS ***			** NH3 NITROGEN **			**** TOTAL N *****		
STATE	PROJECTED FLOW	INF.	EFF.	% REM.	INF.	EFF.	% REM.	# PLANTS	FLOW	% TOT. FLOW	# PLANTS	FLOW	% TOT. FLOW	# PLANTS	FLOW	% TOT. FLOW
ALABAMA	1,047	209	16	92.2	210	30	85.6	0	0	0.0	101	921	87.9	0	0	0.0
ALASKA	15	2	0	88.8	2	0	87.2	0	0	0.0	0	0	0.0	0	0	0.0
ARIZONA	2	0	0	93.8	0	0	91.9	1	0	1.5	0	0	0.0	0	0	0.0
ARKANSAS	499	120	5	95.5	110	7	93.0	0	0	0.0	0	0	0.0	0	0	0.0
CALIFORNIA	2,831	840	41	95.0	888	38	95.7	4	273	9.6	18	943	33.3	0	0	0.0
COLORADO	1,059	234	22	90.2	253	22	90.9	8	36	3.4	14	330	31.1	0	0	0.0
CONNECTICUT	370	77	6	91.6	73	5	92.8	12	296	79.8	10	254	68.5	0	0	0.0
DELAWARE	568	132	8	93.4	130	11	91.3	3	60	10.7	2	15	2.6	0	0	0.0
DIST. OF COLUM.	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
FLORIDA	1,516	313	30	90.3	319	33	89.5	7	239	15.7	89	611	40.3	0	0	0.0
GEORGIA	2,373	496	36	92.5	481	62	87.0	23	402	16.9	130	1,996	84.1	0	0	0.0
HAWAII	11	2	0	92.0	2	0	92.3	0	0	0.0	0	0	0.0	0	0	0.0
IDAHO	160	33	3	89.5	34	4	86.4	4	33	21.0	3	28	17.5	0	0	0.0
ILLINOIS	12,081	1,931	135	92.9	2,756	191	93.0	47	596	4.9	105	9,664	79.9	0	0	0.0
INDIANA	3,558	706	47	93.3	806	47	94.1	85	1,903	53.4	60	2,309	64.9	0	0	0.0
IOWA	684	148	10	92.9	153	15	89.6	0	0	0.0	97	628	91.8	0	0	0.0
KANSAS	101	23	1	95.0	18	1	93.7	0	0	0.0	0	0	0.0	0	0	0.0
KENTUCKY	799	163	12	92.3	172	19	88.7	1	0	0.0	229	724	90.6	0	0	0.0
LOUISIANA	255	57	3	93.9	53	5	90.2	0	0	0.0	0	0	0.0	0	0	0.0
MAINE	9	3	0	93.9	3	0	93.5	0	9	96.1	0	0	0.0	0	0	0.0
MARYLAND	1,743	388	44	88.5	348	43	87.5	18	1,439	82.5	12	127	7.3	0	0	0.0
MASSACHUSETTS	610	122	9	91.9	133	9	92.5	16	372	61.0	10	148	24.3	0	0	0.0
MICHIGAN	6,572	1,248	159	87.2	1,784	170	90.4	173	6,557	99.7	30	848	12.9	0	0	0.0
MINNESOTA	1,645	457	22	95.0	505	47	90.6	48	329	20.0	10	1,323	80.4	0	0	0.0
MISSISSIPPI	711	148	9	93.8	144	19	86.1	2	1	0.1	200	560	78.7	0	0	0.0
MISSOURI	195	35	2	96.2	40	2	93.9	0	0	0.0	1	113	58.0	0	0	0.0
MONTANA	10	1	0	87.0	1	0	89.1	0	0	0.0	1	10	100.0	0	0	0.0
NEBRASKA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
NEVADA	512	68	5	92.2	68	2	96.1	2	492	96.0	1	151	29.5	0	0	0.0
NEW HAMPSHIRE	44	9	0	92.2	10	0	93.8	3	34	76.2	5	42	96.1	0	0	0.0
NEW JERSEY	891	206	[illegible]	92.2	201	17	91.5	12	132	14.8	28	458	51.4	0	0	0.0
NEW MEXICO	51	10	0	91.1	13	1	89.4	3	11	22.1	1	0	1.1	0	0	0.0
NEW YORK	3,661	751	77	89.7	809	84	89.5	56	2,763	75.4	47	512	13.9	0	0	0.0
NORTH CAROLINA	1,404	377	20	94.4	320	40	87.4	7	47	3.3	141	1,098	78.2	0	0	0.0
NORTH DAKOTA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
OHIO	5,985	1,212	90	92.5	1,343	101	92.4	135	4,198	71.8	288	3,860	65.3	0	0	0.0
OKLAHOMA	348	77	4	93.7	84	8	90.2	4	134	38.6	13	241	69.4	0	0	0.0
OREGON	1,517	364	23	93.5	348	23	93.2	1	56	3.7	1	36	2.4	0	0	0.0
PENNSYLVANIA	5,217	1,119	97	91.2	1,269	125	90.1	207	1,373	26.3	343	1,682	32.2	0	0	0.0
RHODE ISLAND	175	46	2	94.5	44	3	92.9	2	6	3.4	3	164	93.8	0	0	0.0
SOUTH CAROLINA	513	153	9	94.0	105	17	86.8	15	151	29.5	67	434	84.5	0	0	0.0
SOUTH DAKOTA	166	52	2	94.2	49	3	93.5	0	0	0.0	11	156	93.6	0	0	0.0
TENNESSEE	2,099	578	37	93.4	468	47	89.6	11	2	0.1	167	2,075	98.0	0	0	0.0
TEXAS	3,215	1,325	52	96.0	1,322	78	94.0	7	43	0.8	49	974	18.6	0	0	0.0
UTAH	1,242	244	14	93.8	278	12	95.3	0	0	0.0	2	19	1.5	0	0	0.0
VERMONT	131	28	2	90.2	25	2	89.3	24	97	74.4	13	50	38.7	0	0	0.0
VIRGINIA	925	218	17	92.1	203	17	91.3	9	35	3.8	3	20	2.2	0	0	0.0
WASHINGTON	78	10	0	91.4	11	1	89.1	0	0	0.0	2	16	21.1	0	0	0.0
WEST VIRGINIA	241	69	3	93.5	66	3	95.0	2	8	3.5	23	128	53.0	0	0	0.0
WISCONSIN	3,126	740	82	88.9	703	79	89.6	75	2,647	84.6	101	619	19.8	0	0	0.0
WYOMING	96	20	2	85.8	23	2	87.7	0	0	0.0	4	96	100.0	0	0	0.0
AMERICAN SAMOA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
GUAM	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
N. MARIANAS	19	2	0	85.1	2	0	85.1	0	0	0.0	0	0	0.0	0	0	0.0
PUERTO RICO	38	9	0	91.7	8	0	90.9	1	16	41.9	3	18	47.2	0	0	0.0
PAC. TR. TERR.	0	1	0	85.5	1	0	85.5	0	0	0.0	0	0	0.0	0	0	0.0
VIRGIN ISLANDS	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
U.S. TOTALS	73,073	15,611	1,198	92.3	17,297	1,465	91.5	1,033	24,805	33.9	2,429	34,422	47.1	0	0	0.0

NOTES: 1. FLOWS IN CUBIC METERS X 1000 2. METRIC TONS X .9072 = SHORT TONS

3. SUM OF ENTRIES MAY NOT EQUAL TOTALS DUE TO ROUND-OFFS

4. FACILITIES WITH ZERO DISCHARGE OR RAW DISCHARGE ARE NOT INCLUDED

TABLE 29

NUMBER OF PLANTS PROJECTED FOR ADVANCED SECONDARY TREATMENT BY YEAR 2000 (BY TOTAL PROJECTED DESIGN FLOW)

Table 29 is a flow summary for all advanced secondary treatment plants projected to be in operation by the year 2000. The treatment levels attained by advanced secondary plants are defined in terms of the effluent BOD_5 concentration and/or the removal of the nutrients phosphorus (as PO_4) and/or ammonia (NH_3). A plant is considered to be advanced secondary in design if it is capable of consistently producing an effluent with a BOD_5 concentration in the range of 24 to 10 mg/l and/or it has specific processes which remove phosphorus and/or ammonia in excess of the amounts normally removed by secondary treatment. A summary is provided for each State and U.S. Territory. National totals are summarized at the bottom of the table.

In the second column the total number of projected advanced secondary treatment plants in each State is reported. Column three represents the total wastewater treatment capacity of the plants in thousand cubic meters per day. The projected design flow for each plant was used to calculate the total treatment capacity value.

Subsequent columns provide a breakdown of the State totals into seven flow ranges. The ranges specified in the column headings are reported in thousand cubic meters per day and, in parentheses beneath the headings, in million gallons per day. Reported for each flow range are the number of plants in the range and the percentage of the total State advanced secondary treatment capacity that is accounted for by each flow range.

Included in this summary are advanced secondary plants in operation in 1982 which will not be abandoned or upgraded between 1982 and 2000; primary, advanced primary, and secondary plants which will be upgraded to advanced secondary levels before 2000; and new advanced secondary plants which will be constructed prior to 2000.

Some column entries will be found which list a value for the number of plants but show zero for Total Design Flow or Percent of Flow. This occurs when the design flow value is less than 0.5 or the percent value is less than 0.05; in these cases the value is rounded to zero.

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TABLE 29

1982 NEEDS SURVEY

NUMBER OF PLANTS PROJECTED FOR ADVANCED SECONDARY TREATMENT BY YEAR 2000

(BY TOTAL PROJECTED DESIGN FLOW)

			======================== PLANTS AND PERCENT OF FLOW BY FLOW RANGE ========================											
			0-.4 (0-.10)		.401-1.9 (.11-.50)		1.901-4 (.51-1.05)		4.001-19 (1.06-5.01)		19.001-40 (5.02-10.56)		40.001-190 (10.57-50.19)		190.001+ (50.2+)
STATE	TOTAL PLANTS	TOTAL DESIGN FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW
ALABAMA	116	1,047	29	0.7	31	2.9	12	3.0	35	29.5	5	13.7	3	28.2	1	21.6
ALASKA	3	15	0	0.0	1	7.2	0	0.0	2	92.7	0	0.0	0	0.0	0	0.0
ARIZONA	2	2	1	1.5	0	0.0	1	98.4	0	0.0	0	0.0	0	0.0	0	0.0
ARKANSAS	315	499	194	6.9	76	12.3	14	7.8	26	42.2	4	21.5	1	9.0	0	0.0
CALIFORNIA	63	2,831	0	0.0	9	0.3	6	0.6	21	7.8	10	9.7	14	41.2	3	40.2
COLORADO	22	1,059	3	0.0	2	0.2	1	0.2	12	10.7	1	2.0	2	20.5	1	66.0
CONNECTICUT	25	370	0	0.0	5	1.6	4	2.8	9	21.2	4	29.9	3	44.2	0	0.0
DELAWARE	13	368	1	0.0	1	0.3	6	3.2	2	4.1	0	0.0	2	24.6	1	67.6
DIST. OF COLUM.	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
FLORIDA	160	1,516	16	0.2	69	4.4	25	4.5	33	19.2	7	12.5	10	58.8	0	0.0
GEORGIA	167	2,373	26	0.2	54	1.9	21	2.4	39	13.2	14	16.5	12	47.5	1	15.9
HAWAII	1	11	0	0.0	0	0.0	0	0.0	1	99.9	0	0.0	0	0.0	0	0.0
IDAHO	9	160	1	0.1	1	0.7	2	3.5	2	6.2	1	14.1	2	75.2	0	0.0
ILLINOIS	438	12,081	54	0.1	148	1.3	69	1.6	113	8.3	23	5.6	26	15.9	5	66.9
INDIANA	384	3,558	140	0.8	141	3.6	26	2.0	53	14.1	4	3.0	16	37.4	4	38.8
IOWA	104	684	14	0.4	40	6.3	19	7.7	24	28.1	4	15.3	3	41.8	0	0.0
KANSAS	6	101	0	0.0	1	0.5	1	3.7	3	21.3	0	0.0	1	74.3	0	0.0
KENTUCKY	234	799	93	2.7	73	7.9	23	7.5	42	53.6	1	2.8	2	25.2	0	0.0
LOUISIANA	35	255	7	0.6	6	2.1	4	4.6	13	47.6	5	44.9	0	0.0	0	0.0
MAINE	10	9	6	9.1	2	13.2	1	20.3	1	57.1	0	0.0	0	0.0	0	0.0
MARYLAND	188	1,743	112	1.0	40	2.3	12	1.9	11	6.4	6	10.1	5	15.8	2	62.1
MASSACHUSETTS	29	610	1	0.0	6	1.1	4	1.9	11	16.5	3	13.4	3	32.0	1	34.7
MICHIGAN	180	6,572	6	0.0	40	0.7	41	1.7	64	8.3	10	4.2	14	21.4	5	63.3
MINNESOTA	84	1,645	19	0.2	36	2.0	11	1.7	12	5.6	2	3.4	3	20.1	1	66.7
MISSISSIPPI	272	711	174	4.0	65	7.7	12	4.6	15	21.8	4	18.1	1	7.3	1	36.1
MISSOURI	40	195	17	2.2	14	6.7	2	2.8	5	18.4	1	11.6	1	58.0	0	0.0
MONTANA	1	10	0	0.0	0	0.0	0	0.0	1	99.9	0	0.0	0	0.0	0	0.0
NEBRASKA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NEVADA	5	512	0	0.0	1	0.2	0	0.0	2	3.6	0	0.0	1	29.5	1	66.5
NEW HAMPSHIRE	7	44	1	0.6	3	7.5	1	5.2	1	18.2	1	68.2	0	0.0	0	0.0
NEW JERSEY	53	891	1	0.0	7	1.2	8	2.7	29	33.8	4	13.0	3	17.2	1	31.8
NEW MEXICO	8	51	0	0.0	4	4.7	1	5.1	2	30.7	1	59.3	0	0.0	0	0.0
NEW YORK	203	3,661	50	0.2	55	1.7	25	1.9	44	10.9	13	10.4	12	26.0	4	48.7
NORTH CAROLINA	225	1,404	129	0.9	33	1.9	16	3.3	24	19.0	13	26.5	10	48.1	0	0.0
NORTH DAKOTA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
OHIO	533	5,905	199	0.6	166	2.4	39	1.7	72	11.7	27	12.0	24	30.8	6	40.5
OKLAHOMA	29	348	4	0.2	6	2.2	3	2.4	10	32.5	3	19.5	3	42.9	0	0.0
OREGON	119	1,517	14	0.2	47	3.3	15	2.8	29	19.2	8	16.2	5	33.0	1	24.9
PENNSYLVANIA	487	5,217	105	0.4	176	3.5	68	3.6	104	18.3	22	10.9	8	13.4	4	49.5
RHODE ISLAND	6	175	1	0.1	0	0.0	0	0.0	2	5.9	1	20.9	2	72.9	0	0.0
SOUTH CAROLINA	112	513	52	2.0	29	6.4	8	4.7	14	23.8	8	43.1	1	19.6	0	0.0
SOUTH DAKOTA	15	166	2	0.2	3	1.7	2	5.5	6	28.7	0	0.0	2	64.6	0	0.0
TENNESSEE	173	2,099	42	0.4	50	2.5	26	3.3	40	17.4	6	7.5	7	25.3	2	43.3
TEXAS	392	5,215	69	0.3	147	2.8	72	3.8	69	11.8	15	7.3	13	18.7	7	55.0
UTAH	137	1,242	74	1.1	31	2.2	7	1.5	15	11.1	4	9.5	5	47.5	1	26.8
VERMONT	32	131	4	0.5	13	9.3	4	8.9	10	66.5	1	14.6	0	0.0	0	0.0
VIRGINIA	74	925	18	0.3	26	2.5	7	2.4	13	13.1	4	12.1	5	49.6	1	20.6
WASHINGTON	5	78	0	0.0	2	3.2	0	0.0	1	19.7	2	76.9	0	0.0	0	0.0
WEST VIRGINIA	82	241	32	3.0	28	12.1	8	9.9	12	37.3	0	0.0	2	37.4	0	0.0
WISCONSIN	229	3,126	57	0.4	76	2.4	43	4.0	33	10.4	6	4.4	11	28.8	3	49.3
WYOMING	4	96	0	0.0	1	0.4	0	0.0	2	28.7	0	0.0	1	70.8	0	0.0
AMERICAN SAMOA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
GUAM	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
N. MARIANAS	2	19	0	0.0	0	0.0	0	0.0	2	100.0	0	0.0	0	0.0	0	0.0
PUERTO RICO	5	36	0	0.0	0	0.0	1	9.8	4	90.1	0	0.0	0	0.0	0	0.0
PAC. TR. TERR.	3	8	0	0.0	2	30.8	0	0.0	1	69.1	0	0.0	0	0.0	0	0.0
VIRGIN ISLANDS	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
U.S. TOTALS	5,849	73,873	1,768	0.4	1,775	2.3	671	2.5	1,091	13.8	248	9.3	239	26.5	57	44.8

NOTES: 1. FLOW RANGE VALUES IN CUBIC METERS PER DAY X 1000. (APPROXIMATE MGD IN PARENTHESES).

2. TOTAL STATE FLOW IN CUBIC METERS PER DAY X 1000.

TABLE 30

NUMBER OF NEW ADVANCED SECONDARY TREATMENT PLANTS TO BE BUILT BETWEEN 1982 AND 2000 (BY TOTAL PROJECTED DESIGN FLOW)

Table 30 is a flow summary for all new advanced secondary treatment plants which will be constructed between 1982 and 2000. The treatment levels attained by advanced secondary plants are defined in terms of the effluent with a BOD_5 concentration and/or the removal of the nutrients phosphorus (as PO_4) and/or ammonia (NH_3). A plant is considered to be advanced secondary in design if it is capable of consistently producing an effluent with a BOD_5 concentration in the range of 24 to 10 mg/l and/or it has specific processes which remove phosphorus and/or ammonia in excess of the amounts normally removed by secondary treatment. A summary is provided for each State and U.S. Territory. National totals are summarized at the bottom of the table.

In the second column the total number of new advanced secondary treatment plants to be constructed in each State is reported. Column three represents the total wastewater treatment capacity of the plants in thousand cubic meters per day. The projected design flow for each plant was used to calculate the total treatment capacity value.

Subsequent columns provide a breakdown of the State totals into seven flow ranges. The ranges specified in the column headings are reported in thousand cubic meters per day and, in parentheses beneath the headings, in million gallons per day. Reported for each flow range are the number of plants in the range and the percentage of the State advanced secondary treatment capacity that is accounted for by each flow range.

Included in this summary are entirely new advanced secondary plants which are planned to be constructed by the year 2000. Excluded are advanced secondary plants that were operational in 1982 and primary, advanced primary, and secondary plants planned to be upgraded to advanced secondary treatment by the year 2000.

Some column entries will be found which list a value for the number of plants but show zero for Total Design Flow or Percent of Flow. This occurs when the design flow value is less than 0.5 or the percent value is less than 0.05; in these cases the value is rounded to zero.

DECEMBER 31, 1982
TABLE 30

1982 NEEDS SURVEY

NUMBER OF NEW ADVANCED SECONDARY TREATMENT PLANTS TO BE BUILT BETWEEN 1982 AND 2000

(BY TOTAL PROJECTED DESIGN FLOW)

************************* PLANTS AND PERCENT OF FLOW BY FLOW RANGE *************************

STATE	TOTAL PLANTS	TOTAL DESIGN FLOW	0-.4 (0-.10)		.401-1.9 (.11-.50)		1.901-4 (.51-1.05)		4.001-19 (1.06-5.01)		19.001-40 (5.02-10.56)		40.001-190 (10.57-50.19)		190.001+ (50.2+)	
			PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW
ALABAMA	37	60	22	9.3	10	12.7	2	6.8	3	70.9	0	0.0	0	0.0	0	0.0
ALASKA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ARIZONA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ARKANSAS	169	64	154	37.7	12	11.8	0	0.0	2	15.1	1	35.2	0	0.0	0	0.0
CALIFORNIA	2	87	0	0.0	0	0.0	1	4.3	0	0.0	0	0.0	1	95.6	0	0.0
COLORADO	1	0	1	99.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
CONNECTICUT	1	9	0	0.0	0	0.0	0	0.0	1	99.9	0	0.0	0	0.0	0	0.0
DELAWARE	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
DIST. OF COLUM.	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
FLORIDA	89	169	16	2.5	54	30.3	13	20.2	5	20.0	0	0.0	1	26.7	0	0.0
GEORGIA	54	165	18	2.7	22	8.1	3	3.8	9	48.3	2	36.9	0	0.0	0	0.0
HAWAII	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
IDAHO	2	6	0	0.0	1	17.1	0	0.0	1	82.8	0	0.0	0	0.0	0	0.0
ILLINOIS	28	113	16	2.9	8	5.9	2	6.1	1	5.4	0	0.0	1	79.4	0	0.0
INDIANA	136	67	106	30.5	24	26.0	3	11.0	3	32.4	0	0.0	0	0.0	0	0.0
IOWA	2	7	1	1.6	0	0.0	0	0.0	1	98.3	0	0.0	0	0.0	0	0.0
KANSAS	2	17	0	0.0	0	0.0	0	0.0	2	100.0	0	0.0	0	0.0	0	0.0
KENTUCKY	99	66	66	21.5	26	27.1	5	20.1	2	31.1	0	0.0	0	0.0	0	0.0
LOUISIANA	10	28	5	3.9	2	3.2	1	8.3	1	15.3	1	69.2	0	0.0	0	0.0
MAINE	7	3	5	18.2	1	22.9	1	58.7	0	0.0	0	0.0	0	0.0	0	0.0
MARYLAND	113	47	95	33.1	14	23.3	3	16.2	1	27.2	0	0.0	0	0.0	0	0.0
MASSACHUSETTS	6	111	1	0.1	2	2.0	0	0.0	2	10.5	0	0.0	1	87.2	0	0.0
MICHIGAN	15	274	5	0.4	6	1.9	1	0.8	2	5.7	0	0.0	0	0.0	1	91.0
MINNESOTA	1	1	0	0.0	1	99.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
MISSISSIPPI	180	185	155	22.4	19	11.1	3	6.9	2	10.0	0	0.0	1	49.3	0	0.0
MISSOURI	14	6	9	28.7	4	37.7	1	33.5	0	0.0	0	0.0	0	0.0	0	0.0
MONTANA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NEBRASKA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NEVADA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NEW HAMPSHIRE	3	10	0	0.0	2	19.5	0	0.0	1	80.4	0	0.0	0	0.0	0	0.0
NEW JERSEY	11	99	0	0.0	2	2.4	2	6.9	6	60.2	1	30.3	0	0.0	0	0.0
NEW MEXICO	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NEW YORK	81	252	42	3.2	25	10.1	6	6.4	5	11.1	1	8.9	2	60.0	0	0.0
NORTH CAROLINA	57	236	32	2.6	15	4.7	2	2.5	3	12.0	4	45.9	1	32.0	0	0.0
NORTH DAKOTA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
OHIO	135	194	92	10.8	34	11.1	0	0.0	6	25.2	2	31.0	1	21.7	0	0.0
OKLAHOMA	1	20	0	0.0	0	0.0	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0
OREGON	14	31	8	5.4	5	14.5	0	0.0	0	0.0	1	79.9	0	0.0	0	0.0
PENNSYLVANIA	147	188	56	7.2	65	33.6	14	17.4	9	30.9	1	10.6	0	0.0	0	0.0
RHODE ISLAND	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SOUTH CAROLINA	64	65	48	14.4	12	17.9	1	5.8	2	26.7	1	34.9	0	0.0	0	0.0
SOUTH DAKOTA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TENNESSEE	48	46	27	13.7	16	23.9	3	19.7	2	42.5	0	0.0	0	0.0	0	0.0
TEXAS	104	690	51	1.7	41	8.0	6	2.4	4	4.1	0	0.0	1	13.1	1	73.4
UTAH	91	43	70	32.0	18	30.5	2	10.3	1	27.0	0	0.0	0	0.0	0	0.0
VERMONT	4	8	2	5.3	0	0.0	1	27.3	1	67.2	0	0.0	0	0.0	0	0.0
VIRGINIA	16	164	4	0.5	6	2.8	1	1.3	3	13.5	1	12.7	1	68.8	0	0.0
WASHINGTON	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
WEST VIRGINIA	52	56	30	11.8	14	24.2	5	27.1	3	36.7	0	0.0	0	0.0	0	0.0
WISCONSIN	9	22	5	4.7	2	11.9	1	17.0	1	66.3	0	0.0	0	0.0	0	0.0
WYOMING	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
AMERICAN SAMOA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
GUAM	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
N. MARIANAS	1	9	0	0.0	0	0.0	0	0.0	1	99.9	0	0.0	0	0.0	0	0.0
PUERTO RICO	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
PAC. TR. TERR.	2	2	0	0.0	2	99.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
VIRGIN ISLANDS	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
U.S. TOTALS	1,808	3,562	1,144	6.2	465	10.8	83	6.2	86	19.5	17	12.2	11	23.6	2	21.2

NOTES: 1. FLOW RANGE VALUES IN CUBIC METERS PER DAY X 1000. (APPROXIMATE MGD IN PARENTHESES).

2. TOTAL STATE FLOW IN CUBIC METERS PER DAY X 1000.

TABLE 31

DOLLAR NEEDS FOR CONSTRUCTION OF NEW ADVANCED SECONDARY FACILITIES, BY PLANT SIZE

Table 31 summarizes the projected costs, reported in January 1982 dollars, for the construction of new advanced secondary treatment plants to be built between 1982 and 2000. Table 31 is a direct extension of Table 30.

The summary indicates a total dollar need per State for new advanced secondary facilities. The State totals are broken down into dollar needs by flow range. The dollar needs of an individual plant are included in the total for the flow range shown which encompasses its projected design capacity.

DECEMBER 31, 1982
TABLE 31

1982 NEEDS SURVEY

DOLLAR NEEDS FOR CONSTRUCTION OF NEW ADVANCED SECONDARY TREATMENT FACILITIES, BY PLANT SIZE

(THOUSANDS OF 1982 DOLLARS)

************************** TOTAL PROJECTED DESIGN FLOW **************************

CUBIC METERS PER DAY X 1000: (MILLION GALLONS PER DAY)			0-.40 (0-.10)	.401-1.9 (.11-.50)	1.901-4.0 (.51-1.05)	4.001-19 (1.06-5.01)	19.001-40 (5.02-10.56)	40.001-190 (10.57-50.19)	190.001+ (50.2+)
STATE	# OF PLANTS	STATE NEEDS	NEEDS	NEEDS	NEEDS	NEEDS	NEEDS	NEEDS	NEEDS
ALABAMA	37	36,446	11,696	9,531	2,434	12,785	0	0	0
ALASKA	0	0	0	0	0	0	0	0	0
ARIZONA	0	0	0	0	0	0	0	0	0
ARKANSAS	169	53,113	32,953	6,319	0	3,280	10,561	0	0
CALIFORNIA	2	61,712	0	0	4,862	0	0	56,850	0
COLORADO	1	324	324	0	0	0	0	0	0
CONNECTICUT	1	11,410	0	0	0	11,410	0	0	0
DELAWARE	0	0	0	0	0	0	0	0	0
DIST. OF COLUM.	0	0	0	0	0	0	0	0	0
FLORIDA	89	179,155	9,316	69,775	33,310	26,493	0	40,261	0
GEORGIA	54	94,220	8,373	19,096	3,165	44,804	18,782	0	0
HAWAII	0	0	0	0	0	0	0	0	0
IDAHO	2	8,751	0	1,787	0	6,964	0	0	0
ILLINOIS	28	28,149	5,576	9,036	6,936	3,119	0	3,482	0
INDIANA	136	101,264	49,223	31,005	9,576	11,460	0	0	0
IOWA	2	92	92	0	0	0	0	0	0
KANSAS	2	7,487	0	0	0	7,487	0	0	0
KENTUCKY	99	80,982	40,322	28,300	7,817	4,543	0	0	0
LOUISIANA	10	18,982	997	1,002	2,519	3,779	10,685	0	0
MAINE	7	7,923	2,065	803	5,055	0	0	0	0
MARYLAND	113	54,158	27,983	13,127	4,988	8,060	0	0	0
MASSACHUSETTS	6	26,551	560	4,672	0	0	0	21,319	0
MICHIGAN	15	183,019	2,353	5,799	2,750	14,587	0	0	157,530
MINNESOTA	1	2,699	0	2,699	0	0	0	0	0
MISSISSIPPI	180	98,876	58,221	17,432	2,743	4,870	0	15,610	0
MISSOURI	14	9,422	2,936	2,324	4,162	0	0	0	0
MONTANA	0	0	0	0	0	0	0	0	0
NEBRASKA	0	0	0	0	0	0	0	0	0
NEVADA	0	0	0	0	0	0	0	0	0
NEW HAMPSHIRE	3	1,365	0	1,365	0	0	0	0	0
NEW JERSEY	11	84,497	0	2,641	1,490	61,434	18,932	0	0
NEW MEXICO	0	0	0	0	0	0	0	0	0
NEW YORK	81	158,096	15,053	34,036	15,394	29,848	18,645	45,120	0
NORTH CAROLINA	57	81,989	11,722	14,923	2,223	17,252	35,869	0	0
NORTH DAKOTA	0	0	0	0	0	0	0	0	0
OHIO	135	168,073	48,771	32,674	0	33,557	39,534	13,537	0
OKLAHOMA	1	10,550	0	0	0	0	10,550	0	0
OREGON	14	21,332	3,833	5,382	0	0	12,117	0	0
PENNSYLVANIA	147	233,975	32,147	95,496	43,558	47,826	14,948	0	0
RHODE ISLAND	0	0	0	0	0	0	0	0	0
SOUTH CAROLINA	64	34,484	15,691	13,715	1,549	3,529	0	0	0
SOUTH DAKOTA	0	0	0	0	0	0	0	0	0
TENNESSEE	48	44,991	13,541	14,927	3,837	12,686	0	0	0
TEXAS	104	289,796	22,233	41,831	11,104	14,788	0	25,457	174,383
UTAH	91	44,082	20,499	13,858	5,114	4,611	0	0	0
VERMONT	4	11,269	1,157	0	3,974	6,138	0	0	0
VIRGINIA	16	93,239	906	5,020	2,393	14,131	17,049	53,740	0
WASHINGTON	0	0	0	0	0	0	0	0	0
WEST VIRGINIA	52	55,829	14,020	20,009	8,388	13,412	0	0	0
WISCONSIN	9	15,084	1,057	3,959	4,269	5,799	0	0	0
WYOMING	0	0	0	0	0	0	0	0	0
AMERICAN SAMOA	0	0	0	0	0	0	0	0	0
GUAM	0	0	0	0	0	0	0	0	0
N. MARIANAS	1	7,381	0	0	0	7,381	0	0	0
PUERTO RICO	0	0	0	0	0	0	0	0	0
PAC. TR. TERR.	2	3,836	0	3,836	0	0	0	0	0
VIRGIN ISLANDS	0	0	0	0	0	0	0	0	0
U.S. TOTALS	1,808	2,424,603	453,620	526,379	193,610	436,033	207,672	275,376	331,913

TABLE 32

POPULATIONS SERVED BY TERTIARY TREATMENT PRESENT AND PROJECTED, RESIDENT AND NONRESIDENT

Table 32 summarizes the 1980 populations served and the 2000 populations projected to be served by facilities designed to provide tertiary (advanced wastewater) treatment. The treatment levels attained by tertiary plants are defined in terms of the effluent BOD_5 concentration and/or the removal of nitrogen. A plant is considered to be tertiary in design if it is capable of consistently producing an effluent with a BOD_5 concentration less than 10 mg/l and/or it has specific processes which can remove more than 50 percent of the total nitrogen present in the plant influent.

The 2000 total population values reported are from estimates provided by BEA. The 1980 population value are based on those reported in the April 1981 Report of the Bureau of Census. The Percent Served is a function of the residents receiving treatment in relation to the total State population estimated by BEA.

The total population within the service area of an authority is the sum of persons receiving treatment and not receiving treatment. Those persons not receiving treatment reside in the service area but do not contribute to the treatment facility because they are not on a sewer system.

Resident populations are permanent residents in the service area of a sewerage authority. Nonresident populations include commuters living in one area and working in another, as well as all transients, tourists, and seasonal residents.

DECEMBER 31, 1982
TABLE 32

1982 NEEDS SURVEY

POPULATIONS SERVED BY TERTIARY TREATMENT
PRESENT AND PROJECTED, RESIDENT AND NONRESIDENT
(POPULATION IN THOUSANDS)

STATE	*** POPULATION ***		**** RECEIVING TREATMENT *****				*** NOT RECEIVING TREATMENT **				** PERCENT *** SERVED		** TREATMENT ** PLANTS	
	1980 TOTAL	2000 TOTAL	1980 RES.	2000 RES.	1980 NONRES	2000 NONRES	1980 RES.	2000 RES.	1980 NONRES	2000 NONRES	1980	2000	1980	2000
ALABAMA	3,890	4,140	0	92	0	3	0	0	0	0	0.0	2.2	0	3
ALASKA	400	694	0	0	0	0	0	0	0	0	0.0	0.0	0	0
ARIZONA	2,718	4,357	0	24	0	0	0	0	0	0	0.0	0.5	0	1
ARKANSAS	2,286	2,970	4	171	0	6	0	0	0	0	0.2	5.7	5	29
CALIFORNIA	23,669	26,786	1,178	2,446	92	117	71	0	0	0	4.9	9.1	15	12
COLORADO	2,889	4,371	2	4	6	10	0	0	0	0	0.0	0.0	1	1
CONNECTICUT	3,108	3,902	31	102	0	0	9	35	0	0	1.0	2.6	2	6
DELAWARE	595	841	3	6	0	0	0	0	0	0	0.6	0.7	1	1
DIST. OF COLUM.	638	694	0	913	0	2,223	0	0	0	0	0.0	131.6	0	1
FLORIDA	9,740	15,049	717	1,864	69	182	34	21	0	0	7.3	12.3	14	28
GEORGIA	5,464	7,053	31	63	1	3	0	0	1	0	0.5	0.8	1	3
HAWAII	965	1,366	0	0	0	0	0	0	0	0	0.0	0.0	0	0
IDAHO	944	1,183	7	99	0	8	0	3	0	0	0.8	8.4	1	5
ILLINOIS	11,418	12,358	13	24	0	0	0	0	0	0	0.1	0.1	2	2
INDIANA	5,490	6,059	24	54	0	0	0	0	0	0	0.4	0.9	2	3
IOWA	2,913	3,101	0	0	0	0	0	0	0	0	0.0	0.0	0	0
KANSAS	2,363	2,642	0	0	0	0	0	0	0	0	0.0	0.0	0	0
KENTUCKY	3,661	4,224	1	5	0	0	0	0	0	0	0.0	0.1	1	3
LOUISIANA	4,204	4,880	82	181	0	0	0	0	0	0	1.9	3.7	3	5
MAINE	1,125	1,222	0	26	0	0	0	7	0	0	0.0	2.1	0	4
MARYLAND	4,216	5,583	246	636	28	87	26	0	0	0	5.8	11.4	6	11
MASSACHUSETTS	5,737	6,736	79	527	0	2	221	173	0	0	1.3	7.8	4	13
MICHIGAN	9,258	10,314	441	829	38	40	31	15	0	0	4.7	8.0	10	17
MINNESOTA	4,077	4,505	59	208	5	0	0	0	0	0	1.4	4.6	12	39
MISSISSIPPI	2,521	2,740	0	44	0	10	0	2	0	0	0.0	1.6	5	4
MISSOURI	4,917	5,379	0	1	0	0	0	0	0	0	0.0	0.0	0	1
MONTANA	787	938	0	0	0	0	0	0	0	0	0.0	0.0	0	0
NEBRASKA	1,570	1,734	0	0	0	0	0	0	0	0	0.0	0.0	0	0
NEVADA	799	1,408	0	1	0	0	0	0	0	0	0.0	0.1	0	1
NEW HAMPSHIRE	921	1,306	0	52	2	5	0	38	0	0	0.0	4.0	1	4
NEW JERSEY	7,364	9,022	186	1,243	7	94	52	53	0	0	2.5	13.7	6	21
NEW MEXICO	1,300	1,781	0	0	0	0	0	0	0	0	0.0	0.0	0	0
NEW YORK	17,577	19,683	209	826	15	218	74	71	0	0	1.1	4.1	32	102
NORTH CAROLINA	5,874	7,419	346	1,494	0	40	163	217	0	0	5.9	20.1	28	134
NORTH DAKOTA	653	690	0	0	0	0	0	0	0	0	0.0	0.0	0	0
OHIO	10,797	12,237	418	2,019	20	44	115	11	0	0	3.8	16.5	34	99
OKLAHOMA	3,025	3,702	0	301	0	0	0	0	0	0	0.0	8.1	0	2
OREGON	2,633	3,209	74	142	0	6	6	0	0	0	2.8	4.4	1	3
PENNSYLVANIA	11,867	12,854	247	555	6	24	41	19	0	0	2.0	4.3	17	32
RHODE ISLAND	947	1,084	0	0	0	0	0	0	0	0	0.0	0.0	0	0
SOUTH CAROLINA	3,119	3,700	0	52	0	122	0	0	0	0	0.0	1.4	0	7
SOUTH DAKOTA	690	730	0	23	0	0	0	0	0	0	0.0	3.1	0	1
TENNESSEE	4,591	5,573	16	199	0	0	12	16	0	0	0.3	3.5	4	10
TEXAS	14,228	21,000	243	463	7	10	4	0	0	0	1.7	2.2	16	21
UTAH	1,461	1,963	0	0	0	0	0	0	0	0	0.0	0.0	0	0
VERMONT	511	607	0	37	0	5	0	1	0	0	0.0	6.1	0	1
VIRGINIA	5,346	6,755	641	1,997	0	25	19	7	0	0	11.9	29.5	5	25
WASHINGTON	4,130	4,850	0	409	3	13	0	38	0	0	0.0	8.4	1	3
WEST VIRGINIA	1,950	2,101	88	158	0	0	2	0	0	0	4.5	7.5	3	11
WISCONSIN	4,705	5,553	18	20	0	0	0	0	0	0	0.2	0.3	1	1
WYOMING	450	484	0	0	0	0	0	0	0	0	0.0	0.0	0	0
AMERICAN SAMOA	33	40	0	0	0	0	0	0	0	0	0.0	0.0	0	0
GUAM	110	275	0	0	0	0	0	0	0	0	0.0	0.0	0	0
N. MARIANAS	17	33	0	0	0	0	0	0	0	0	0.0	0.0	0	0
PUERTO PICO	3,197	4,700	0	0	0	0	0	0	0	0	0.0	0.0	0	0
PAC. TR. TERR.	118	183	0	0	0	0	0	0	0	0	0.0	0.0	0	0
VIRGIN ISLANDS	99	116	0	0	0	0	0	0	0	0	0.0	0.0	0	0
U.S. TOTAL	230,075	276,888	5,411	18,328	386	3,306	890	727	1	1	2.3	6.5	231	670

TABLE 33

PLANT LOADINGS, REMOVAL EFFICIENCIES, AND DISCHARGE RATES FOR FACILITIES IN OPERATION IN 1982 FACILITIES DESIGNED TO PROVIDE TERTIARY TREATMENT

Table 33 summarizes the performance of all treatment facilities designed to provide tertiary treatment. Information is provided for all States and U.S. Territories with a national total shown at the bottom of the table.

This table provides an estimate of the total quantity of various pollutants accepted by treatment plants within the State and the total quantity of these same pollutants in the effluent. Quantities are given in metric tons per day for BOD_5 and Solids. Information is also provided on nutrient removal capabilities.

Plants with Removal Capability are facilities with a specific requirement to remove the listed nutrient. For example, some phosphorus is removed in all treatment plants. However, only plants specifically designed to remove phosphorus are reported in this category. Reported for each nutrient are the total number of plants with this removal capability and the total average flow received by these plants. Also given is the percentage of the total State flow the plants represent.

These data were derived from the daily average influent and effluent pollutant concentrations. The averages are based on the actual performance of each individual treatment plant during the most recent 12 month period for which information could be obtained. The values calculated for each plant are summed into the State and national totals. The main source of information for flow and concentration values was the self-monitoring reports submitted by every facility with an NPDES permit.

Table 33 is an extension of Table 32. A summary of the projected year 2000 performance of all tertiary facilities is given in Table 34.

Total flow is the sum of the actual average daily flows treated by all facilities within the State designed to provide tertiary treatment. All flows are reported in thousand cubic meters per day.

Some States may show influent and/or effluent values of BOD_5 or Solids equal to zero, but still have a percent removal calculated. This is due to the influent and/or effluent value being less than 0.5 metric tons per day in which case the value is rounded to zero.

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TABLE 33

1982 NEEDS SURVEY

PLANT LOADINGS, REMOVAL EFFICIENCIES AND DISCHARGE RATES FOR FACILITIES IN OPERATION IN 1982 FACILITIES DESIGNED TO PROVIDE TERTIARY TREATMENT (METRIC TONS PER DAY)

		REMOVAL EFFICIENCIES						PLANTS WITH REMOVAL CAPABILITY								
		BOD5			SOLIDS			PHOSPHORUS			NH3 NITROGEN			TOTAL N		
STATE	ACTUAL FLOW	INF.	EFF.	% REM.	INF.	EFF.	% REM.	# PLANTS	FLOW	% TOT. FLOW	# PLANTS	FLOW	% TOT. FLOW	# PLANTS	FLOW	% TOT. FLOW
ALABAMA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
ALASKA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
ARIZONA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
ARKANSAS	2	0	0	96.4	0	0	92.1	0	0	0.0	0	0	0.0	0	0	0.0
CALIFORNIA	426	115	3	96.8	134	3	97.1	5	175	41.2	4	162	38.0	7	235	55.2
COLORADO	2	0	0	92.3	0	0	95.4	1	2	100.0	1	2	100.0	1	2	100.0
CONNECTICUT	11	2	0	90.8	2	0	88.6	1	4	42.3	0	0	0.0	0	0	0.0
DELAWARE	0	0	0	47.6	0	0	68.5	0	0	0.0	0	0	0.0	0	0	0.0
DIST. OF COLUN.	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
FLORIDA	334	81	2	96.7	84	3	96.3	11	303	90.5	6	25	7.6	7	233	69.5
GEORGIA	14	2	0	97.5	2	0	85.0	0	0	0.0	1	14	100.0	0	0	0.0
HAWAII	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
IDAHO	4	0	0	97.2	0	0	96.6	0	0	0.0	1	4	100.0	0	0	0.0
ILLINOIS	7	1	0	92.7	1	0	90.4	1	6	87.1	2	7	100.0	1	0	12.8
INDIANA	21	2	0	91.3	1	0	95.2	0	0	0.0	0	0	0.0	0	0	0.0
IOWA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
KANSAS	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
KENTUCKY	0	0	0	98.0	0	0	98.0	0	0	0.0	1	0	100.0	0	0	0.0
LOUISIANA	35	7	0	95.1	7	0	91.6	0	0	0.0	1	5	15.3	1	5	15.3
MAINE	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
MARYLAND	140	27	1	96.1	27	1	96.2	3	77	55.3	2	64	45.6	4	123	87.9
MASSACHUSETTS	51	8	0	94.3	9	0	94.4	4	51	100.0	4	51	100.0	2	24	46.7
MICHIGAN	314	59	3	94.1	44	2	96.4	8	308	98.1	4	176	56.0	1	15	4.8
MINNESOTA	37	8	0	97.6	9	0	95.6	3	19	53.2	2	14	37.9	0	0	0.0
MISSISSIPPI	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
MISSOURI	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
MONTANA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
NEBRASKA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
NEVADA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
NEW HAMPSHIRE	0	0	0	98.7	0	0	99.1	1	0	100.0	1	0	100.0	0	0	0.0
NEW JERSEY	77	13	1	92.4	14	1	91.6	2	29	37.9	4	63	82.7	1	28	37.4
NEW MEXICO	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
NEW YORK	152	21	4	80.8	18	2	85.1	5	29	19.6	13	50	33.1	8	111	73.0
NORTH CAROLINA	238	63	5	91.6	59	6	88.7	0	0	0.0	24	206	86.5	1	0	0.3
NORTH DAKOTA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
OHIO	272	52	2	94.9	55	2	95.7	13	147	54.0	22	253	93.2	0	0	0.0
OKLAHOMA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
OREGON	52	10	0	98.4	13	0	98.3	1	52	100.0	0	0	0.0	0	0	0.0
PENNSYLVANIA	98	19	1	92.5	15	1	92.3	5	29	29.8	10	60	62.0	3	31	32.6
RHODE ISLAND	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
SOUTH CAROLINA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
SOUTH DAKOTA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
TENNESSEE	22	1	0	[illegible]	2	0	97.3	0	0	0.0	4	22	100.0	0	0	0.0
TEXAS	112	22	0	97.7	21	1	95.0	11	46	41.2	11	88	78.5	0	0	0.0
UTAH	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
VERMONT	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
VIRGINIA	230	49	3	92.6	53	2	95.9	5	230	100.0	4	116	50.6	3	50	21.8
WASHINGTON	0	0	0	94.9	0	0	94.9	0	0	0.0	1	0	100.0	1	0	100.0
WEST VIRGINIA	39	8	1	86.1	7	1	86.0	1	2	6.1	1	5	14.5	4	28	73.3
WISCONSIN	3	0	0	97.5	0	0	99.1	0	0	0.0	1	3	100.0	0	0	0.0
WYOMING	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
AMERICAN SAMOA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
GUAM	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
N. MARIANAS	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
PUERTO RICO	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
PAC. TR. TERR.	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
VIRGIN ISLANDS	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
U.S. TOTALS	2,785	586	32	94.3	610	32	94.6	81	1,517	56.0	125	1,402	51.8	47	892	32.9

NOTES: 1. FLOWS IN CUBIC METERS X 1000 2. METRIC TONS X .9072 = SHORT TONS

3. SUM OF ENTRIES MAY NOT EQUAL TOTALS DUE TO ROUND-OFFS

4. FACILITIES WITH ZERO DISCHARGE OR RAW DISCHARGE ARE NOT INCLUDED

TABLE 34

PLANT LOADINGS, REMOVAL EFFICIENCIES, AND DISCHARGE RATES FOR FACILITIES TO BE IN OPERATION IN 2000 FACILITIES DESIGNED TO PROVIDE TERTIARY TREATMENT

Table 34 summarizes the expected performance in the year 2000 of all treatment facilities designed to provide tertiary treatment. Information is provided for all States and U.S. Territories with a national total shown at the bottom of the table.

This table provides an estimate of the total quantity of various pollutants that will be received by treatment plants within the State and the total quantity of these same pollutants that will be in the effluent. Quantities are given in metric tons per day for BOD_5 and Solids. Information is also provided on nutrient removal capabilities.

Plants with Removal Capability are facilities with a specific requirement to remove the listed nutrient. For example, some phosphorus is removed in all treatment plants. However, only plants specifically designed to remove phosphorus are reported in this category. Reported for each nutrient are the total number of plants with this removal capability and the total average daily flow received by these plants. Also given is the percentage of the total State flow the plants represent.

These data were derived from the daily average flow and the daily average influent and effluent pollutant concentrations. The averages are based on the predicted year 2000 situation. The values calculated for each plant are summed into State and national totals.

Total Flow is the sum of the average daily flows to be treated in the year 2000 by all facilities within the State that will be designed to provide tertiary treatment.

Table 34 is an extension of Tables 32 and 33. All flows are reported in thousand cubic meters per day.

Some States may show influent and/or effluent values of BOD_5 or Solids equal to zero, but still have a percent removal calculated. This is due to the influent and/or effluent value being less than 0.5 metric tons per day in which case the value is rounded to zero.

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TABLE 34

1982 NEEDS SURVEY

PLANTS LOADINGS, REMOVAL EFFICIENCIES AND DISCHARGE RATES FOR FACILITIES TO BE IN OPERATION IN 2000 FACILITIES DESIGNED TO PROVIDE TERTIARY TREATMENT (METRIC TONS PER DAY)

		******** REMOVAL EFFICIENCIES ********						*************** PLANTS WITH REMOVAL CAPABILITY ***************								
		****** BOD5			*********** SOLIDS *****			*** PHOSPHORUS ***			** NH3 NITROGEN **			**** TOTAL N *****		
STATE	PROJECTED FLOW	INF.	EFF.	% REM.	INF.	EFF.	% REM.	# PLANTS	FLOW	% TOT. FLOW	# PLANTS	FLOW	% TOT. FLOW	# PLANTS	FLOW	% TOT. FLOW
ALABAMA	69	13	0	97.3	13	2	84.9	0	0	0.0	3	69	100.0	0	0	0.0
ALASKA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
ARIZONA	9	2	0	96.2	2	0	95.8	1	9	100.0	0	0	0.0	0	0	0.0
ARKANSAS	101	22	0	97.6	19	1	92.3	0	0	0.0	0	0	0.0	0	0	0.0
CALIFORNIA	1,193	292	12	95.7	301	19	93.4	5	789	66.1	4	800	67.0	6	882	73.9
COLORADO	5	1	0	98.0	1	0	98.0	1	5	100.0	1	5	100.0	1	5	100.0
CONNECTICUT	52	11	0	94.2	10	0	95.7	3	38	72.8	1	0	1.6	1	22	43.6
DELAWARE	1	0	0	95.7	0	0	95.7	0	0	0.0	0	0	0.0	0	0	0.0
DIST. OF COLUM.	1,169	280	5	97.9	280	8	97.0	1	1,169	100.0	1	1,169	100.0	0	0	0.0
FLORIDA	967	195	5	96.9	198	6	96.4	19	841	86.9	15	178	18.4	9	201	20.8
GEORGIA	46	10	0	97.0	10	1	86.3	0	0	0.0	3	46	100.0	1	7	15.1
HAWAII	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
IDAHO	119	29	2	92.6	27	2	91.3	2	11	9.2	4	78	65.2	2	11	9.2
ILLINOIS	11	2	0	97.7	2	0	96.8	1	9	84.1	2	11	100.0	1	1	15.8
INDIANA	52	11	0	97.6	10	0	97.4	0	0	0.0	0	5	0.0	0	0	0.0
IOWA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
KANSAS	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
KENTUCKY	3	0	0	96.4	0	0	92.8	0	0	0.0	3	3	100.0	1	1	39.6
LOUISIANA	78	16	0	96.0	16	1	90.7	0	0	0.0	1	7	9.8	1	7	9.8
MAINE	17	3	0	95.7	3	0	95.7	4	17	100.0	0	0	0.0	6	0	0.0
MARYLAND	368	67	3	95.2	71	3	95.7	4	356	96.6	2	204	55.4	5	357	96.9
MASSACHUSETTS	340	73	2	97.1	78	2	96.7	12	338	99.2	11	331	97.3	2	38	11.4
MICHIGAN	617	127	2	97.9	129	5	95.9	16	617	99.9	13	409	66.3	2	22	3.7
MINNESOTA	144	40	0	98.0	35	1	94.5	9	33	23.5	16	88	61.3	1	2	1.6
MISSISSIPPI	35	7	0	97.0	7	0	87.0	0	0	0.0	2	29	84.8	0	0	0.0
MISSOURI	0	0	0	97.5	0	0	95.0	0	0	0.0	0	0	0.0	0	0	0.0
MONTANA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
NEBRASKA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
NEVADA	0	0	0	98.0	0	0	80.0	0	0	0.0	0	0	0.0	1	0	100.0
NEW HAMPSHIRE	30	6	0	97.9	7	0	98.1	3	25	82.9	4	30	100.0	0	0	0.0
NEW JERSEY	611	148	3	97.3	162	4	97.4	6	85	13.9	16	575	94.2	8	139	22.8
NEW MEXICO	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
NEW YORK	540	110	5	94.8	109	5	94.8	20	206	38.2	74	375	69.5	25	300	55.6
NORTH CAROLINA	924	234	5	97.4.	200	26	86.8	3	0	0.0	123	872	94.3	1	0	0.0
NORTH DAKOTA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
OHIO	1,514	312	11	96.2	352	12	96.3	50	1,304	86.1	80	685	45.2	2	1	0.1
OKLAHOMA	120	28	0	97.8	36	0	98.2	0	0	0.0	2	120	100.0	0	0	0.0
OREGON	79	15	0	97.5	19	0	97.9	1	75	94.7	0	0	0.0	0	0	0.0
PENNSYLVANIA	241	58	2	96.0	52	4	91.3	13	94	39.1	26	197	81.8	17	164	68.1
RHODE ISLAND	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
SOUTH CAROLINA	41	8	0	97.2	8	0	91.4	1	0	0.6	5	36	88.1	0	0	0.0
SOUTH DAKOTA	10	3	0	96.6	3	0	96.6	0	0	0.0	1	10	100.0	0	0	0.0
TENNESSEE	117	27	0	97.3	25	1	93.3	0	0	0.0	10	117	100.0	1	21	19.3
TEXAS	210	42	1	97.0	42	2	94.6	11	80	38.2	14	177	84.2	1	2	0.9
UTAH	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
VERMONT	25	5	0	96.4	5	0	94.9	0	0	0.0	1	25	100.0	0	0	0.0
VIRGINIA	880	203	3	98.2	212	2	98.8	11	763	86.6	7	456	51.8	8	259	29.4
WASHINGTON	237	47	7	85.0	47	7	85.0	2	236	99.4	3	237	100.0	3	237	100.0
WEST VIRGINIA	58	12	0	92.8	12	1	91.2	1	4	7.7	2	12	20.4	7	41	69.9
WISCONSIN	8	1	0	97.5	2	0	98.0	0	0	0.0	1	8	100.0	0	0	0.0
WYOMING	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
AMERICAN SAMOA	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
GUAM	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
N. MARIANAS	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
PUERTO RICO	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
PAC. TR. TERR.	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
VIRGIN ISLANDS	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
U.S. TOTALS	11,063	2,478	83	96.6	2,523	129	94.8	200	7,114	64.3	451	7,377	66.6	104	2,734	24.7

NOTES: 1. FLOWS IN CUBIC METERS X 1000 2. METRIC TONS X .9072 = SHORT TONS

3. SUM OF ENTRIES MAY NOT EQUAL TOTALS DUE TO ROUND-OFFS

4. FACILITIES WITH ZERO DISCHARGE UR RAW DISCHARGE ARE NOT INCLUDED

TABLE 35

NUMBER OF PLANTS PROJECTED FOR TERTIARY TREATMENT BY YEAR 2000 (BY TOTAL PROJECTED DESIGN FLOW)

Table 35 is a flow summary for all tertiary treatment plants projected to be in operation by the year 2000. The treatment levels attained by tertiary plants are defined in terms of the effluent BOD_5 concentration and/or the removal of nitrogen. A plant is considered to be tertiary in design if it is capable of consistently producing an effluent with a BOD_5 concentration less than 10 mg/l and/or it has specific processes which can remove more than 50 percent of the total nitrogen present in the plant influent. A summary is provided for each State and U.S. Territory. National totals are summarized at the bottom of the table.

In the second column the total number of projected tertiary treatment plants in each State is reported. Column three represents the total wastewater treatment capacity of these plants in thousand cubic meters per day. The projected design flow for each plant was used to calculate the total treatment capacity value.

Subsequent columns provide a breakdown of the State totals into seven flow ranges. The ranges specified in the column headings are reported in thousand cubic meters per day and, in parentheses beneath the headings, in million gallons per day. Reported for each flow range are the number of plants within that range and the percentage of the total State tertiary treatment capacity that is accounted for by each flow range.

Included in this summary are all tertiary plants in operation in 1982 which will not be abandoned between 1982 and 2000; primary, advanced primary, secondary, and advanced secondary plants which will be upgraded to tertiary levels before 2000; and new tertiary plants which will be constructed prior to 2000.

Some column entries will be found which list a value for the number of plants but show zero for Total Design Flow or Percent of Flow. This occurs when the design flow value is less than 0.5 or the percent value is less than 0.05; in these cases the value is rounded to zero.

DECEMBER 31, 1982
TABLE 35

1982 NEEDS SURVEY

NUMBER OF PLANTS PROJECTED FOR TERTIARY TREATMENT BY YEAR 2000

(BY TOTAL PROJECTED DESIGN FLOW)

STATE	TOTAL PLANTS	TOTAL DESIGN FLOW	************************* PLANTS AND PERCENT OF FLOW BY FLOW RANGE *************************													
			0-.4 (0-.10)		.401-1.9 (.11-.50)		1.901-4 (.51-1.05)		4.001-19 (1.06-5.01)		19.001-40 (5.02-10.56)		40.001-190 (10.57-50.19)		190.001+ (50.2+)	
			PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW
ALABAMA	3	69	0	0.0	1	1.6	0	0.0	1	11.8	0	0.0	1	86.5	0	0.0
ALASKA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ARIZONA	1	9	0	0.0	0	0.0	0	0.0	1	99.9	0	0.0	0	0.0	0	0.0
ARKANSAS	29	101	6	1.7	11	11.7	4	12.5	7	49.6	1	24.2	0	0.0	0	0.0
CALIFORNIA	12	1,193	1	0.0	2	0.1	0	0.0	0	0.0	4	11.0	3	27.0	2	61.7
COLORADO	1	5	0	0.0	0	0.0	0	0.0	1	99.9	0	0.0	0	0.0	0	0.0
CONNECTICUT	6	52	1	0.6	2	3.0	0	0.0	2	52.6	1	43.6	0	0.0	0	0.0
DELAWARE	1	1	0	0.0	1	99.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
DIST. OF COLUM.	1	1,169	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	99.9
FLORIDA	28	967	0	0.0	2	0.2	3	1.0	12	10.5	4	11.7	6	31.8	1	44.5
GEORGIA	3	46	0	0.0	0	0.0	0	0.0	2	55.5	1	44.4	0	0.0	0	0.0
HAWAII	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
IDAHO	5	119	0	0.0	0	0.0	1	1.6	2	16.1	0	0.0	2	82.1	0	0.0
ILLINOIS	2	11	0	0.0	1	15.8	0	0.0	1	84.1	0	0.0	0	0.0	0	0.0
INDIANA	3	52	0	0.0	0	0.0	0	0.0	2	45.5	1	54.4	0	0.0	0	0.0
IOWA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
KANSAS	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
KENTUCKY	3	3	0	0.0	3	99.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
LOUISIANA	5	78	0	0.0	1	0.9	1	4.1	1	9.8	1	28.8	1	56.2	0	0.0
MAINE	4	17	2	3.3	1	2.5	0	0.0	1	94.0	0	0.0	0	0.0	0	0.0
MARYLAND	11	368	3	0.1	2	0.5	1	0.5	2	6.1	0	0.0	3	92.5	0	0.0
MASSACHUSETTS	13	340	0	0.0	0	0.0	1	0.7	4	15.3	6	47.9	2	35.8	0	0.0
MICHIGAN	17	617	1	0.0	4	0.9	1	0.4	6	6.4	1	3.6	3	56.6	1	31.8
MINNESOTA	39	144	12	2.0	10	8.2	8	16.1	8	51.3	1	22.1	0	0.0	0	0.0
MISSISSIPPI	4	35	1	0.1	0	0.0	0	0.0	3	99.8	0	0.0	0	0.0	0	0.0
MISSOURI	1	0	0	0.0	1	99.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
MONTANA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NEBRASKA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NEVADA	1	0	0	0.0	1	99.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NEW HAMPSHIRE	4	30	0	0.0	0	0.0	1	6.9	3	93.0	0	0.0	0	0.0	0	0.0
NEW JERSEY	21	611	0	0.0	2	0.3	2	1.0	11	18.7	2	9.1	3	24.3	1	46.4
NEW MEXICO	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NEW YORK	102	540	32	1.2	42	7.2	5	2.5	16	28.3	5	26.9	2	33.6	0	0.0
NORTH CAROLINA	134	924	76	1.0	19	2.3	10	2.8	17	20.7	7	22.3	5	50.6	0	0.0
NORTH DAKOTA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
OHIO	99	1,514	26	0.3	19	1.2	15	3.0	29	17.4	6	11.6	3	16.2	1	49.9
OKLAHOMA	2	120	0	0.0	0	0.0	0	0.0	1	5.5	0	0.0	1	94.4	0	0.0
OREGON	3	79	1	0.4	0	0.0	1	4.7	0	0.0	0	0.0	1	94.7	0	0.0
PENNSYLVANIA	32	241	1	0.0	11	4.9	6	7.3	9	35.0	5	52.6	0	0.0	0	0.0
RHODE ISLAND	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SOUTH CAROLINA	7	41	2	0.9	1	3.3	0	0.0	4	95.6	0	0.0	0	0.0	0	0.0
SOUTH DAKOTA	1	10	0	0.0	0	0.0	0	0.0	1	99.9	0	0.0	0	0.0	0	0.0
TENNESSEE	10	117	0	0.0	1	0.5	3	8.8	3	22.7	3	66.9	0	0.0	0	0.0
TEXAS	21	210	1	0.1	5	3.2	3	3.0	8	34.1	3	31.6	1	26.9	0	0.0
UTAH	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
VERMONT	1	25	0	0.0	0	0.0	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0
VIRGINIA	25	888	4	0.1	8	0.7	1	0.2	4	4.4	1	3.1	5	46.1	2	45.1
WASHINGTON	3	237	0	0.0	2	0.9	0	0.0	0	0.0	0	0.0	0	0.0	1	99.0
WEST VIRGINIA	11	58	0	0.0	4	6.1	2	9.8	5	83.9	0	0.0	0	0.0	0	0.0
WISCONSIN	1	8	0	0.0	0	0.0	0	0.0	1	99.9	0	0.0	0	0.0	0	0.0
WYOMING	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
AMERICAN SAMOA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
GUAM	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
N. MARIANAS	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
PUERTO RICO	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
PAC. TR. TERR.	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
VIRGIN ISLANDS	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
U.S. TOTALS	670	11,063	170	0.2	157	1.4	69	1.8	168	14.6	54	13.4	42	30.2	10	38.0

NOTES: 1. FLOW RANGE VALUES IN CUBIC METERS PER DAY X 1000. (APPROXIMATE MGD IN PARENTHESES).

2. TOTAL STATE FLOW IN CUBIC METERS PER DAY X 1000.

TABLE 36

TERTIARY TREATMENT FACILITIES TO BE BUILT BETWEEN 1982 and 2000 (BY TOTAL PROJECTED DESIGN FLOW)

Table 36 is a flow summary for all new tertiary treatment plants which will be constructed between 1982 and 2000. The treatment levels attained by tertiary plants are defined in terms of the effluent BOD_5 concentration and/or the removal of nitrogen. A plant is considered to be tertiary in design if it is capable of consistently producing an effluent with a BOD_5 concentration less than 10 mg/l and/or it has specific processes which can remove more than 50 percent of the total nitrogen present in the plant influent. A summary is provided for each State and U.S. Territory. National totals are summarized at the bottom of the table.

In the second column the total number of new tertiary treatment plants to be constructed in each State is reported. Column three represents the total treatment capacity value reported in thousand cubic meters per day.

Subsequent columns provide a breakdown of the State totals into seven flow ranges. The ranges specified in the column headings are reported in thousand cubic meters per day and, in parentheses beneath the headings, in million gallons per day. Reported for each flow range are the number of plants in the range and the percentage of the State tertiary treatment capacity that is accounted for by each flow range.

Included in this summary are entirely new tertiary plants which are planned to be constructed by the year 2000. Excluded are tertiary plants that were operational in 1982 and primary, advanced primary, secondary, and advanced secondary plants planned to be upgraded to tertiary treatment by the year 2000.

Some column entries will be found which list a value for the number of plants but show zero for Total Design Flow or Percent of Flow. This occurs when the design flow value is less than 0.5 or the percent value is less than 0.05; in these cases the value is rounded to zero.

DECEMBER 31, 1982
TABLE 36

1982 NEEDS SURVEY

TERTIARY TREATMENT FACILITIES TO BE BUILT BETWEEN 1982 AND 2000

(BY TOTAL PROJECTED DESIGN FLOW)

************************** PLANTS AND PERCENT OF FLOW BY FLOW RANGE **************************

STATE	TOTAL PLANTS	TOT DESIG. FLOW	0-.4 (0-.10)		.401-1.9 (.11-.50)		1.901-4 (.51-1.05)		4.001-19 (1.06-5.01)		19.001-40 (5.02-10.56)		40.001-190 (10.57-50.19)		190.001+ (50.2+)	
			PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW	PLANTS	% FLOW
ALABAMA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ALASKA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ARIZONA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ARKANSAS	4	1	3	43.2	1	56.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
CALIFORNIA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
COLORADO	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
CONNECTICUT	3	1	1	17.2	2	82.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
DELAWARE	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
DIST. OF COLUM.	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
FLORIDA	2	88	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	99.9	0	0.0
GEORGIA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
HAWAII	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
IDAHO	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
ILLINOIS	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
INDIANA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
IOWA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
KANSAS	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
KENTUCKY	1	0	0	0.0	1	99.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
LOUISIANA	2	23	0	0.0	1	3.0	0	0.0	0	0.0	1	96.9	0	0.0	0	0.0
MAINE	3	1	2	56.7	1	43.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
MARYLAND	1	90	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	99.9	0	0.6
MASSACHUSETTS	2	56	0	0.0	0	0.0	1	4.7	0	0.0	0	0.0	1	95.2	0	0.0
MICHIGAN	1	0	1	99.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
MINNESOTA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
MISSISSIPPI	1	0	1	99.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
MISSOURI	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
MONTANA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NEBRASKA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NEVADA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NEW HAMPSHIRE	2	18	0	0.0	0	0.0	0	0.0	2	99.9	0	0.0	0	0.0	0	0.0
NEW JERSEY	4	15	0	0.0	2	14.6	0	0.0	2	85.3	0	0.0	0	0.0	0	0.0
NEW MEXICO	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NEW YORK	45	69	24	7.0	15	19.3	1	4.3	4	39.0	1	30.0	0	0.0	0	0.0
NORTH CAROLINA	32	71	27	6.5	2	1.1	1	4.7	0	0.0	2	87.5	0	0.0	0	0.0
NORTH DAKOTA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
OHIO	29	29	18	14.0	6	19.2	4	47.5	1	19.1	0	0.0	0	0.0	0	0.0
OKLAHOMA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
OREGON	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
PENNSYLVANIA	5	6	1	2.9	3	57.7	1	39.3	0	0.0	0	0.0	0	0.0	0	0.0
RHODE ISLAND	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
SOUTH CAROLINA	3	14	2	2.8	0	0.0	0	0.0	1	97.1	0	0.0	0	0.0	0	0.0
SOUTH DAKOTA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TENNESSEE	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TEXAS	1	17	0	0.0	0	0.0	0	0.0	1	99.9	0	0.0	0	0.0	0	0.0
UTAH	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
VERMONT	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
VIRGINIA	13	17	4	5.2	7	33.6	1	13.7	1	47.3	0	0.0	0	0.0	0	0.0
WASHINGTON	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
WEST VIRGINIA	3	5	0	0.0	2	36.0	1	63.9	0	0.0	0	0.0	0	0.0	0	0.0
WISCONSIN	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
WYOMING	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
AMERICAN SAMOA	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
GUAM	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
N. MARIANAS	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
PUERTO RICO	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
PAC. TR. TERR.	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
VIRGIN ISLANDS	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
U.S. TOTALS	157	530	84	3.2	43	7.1	10	5.9	12	19.6	4	19.9	4	44.0	0	0.0

NOTES: 1. FLOW RANGE VALUES IN CUBIC METERS PER DAY X 1000. (APPROXIMATE MGD IN PARENTHESES).

2. TOTAL STATE FLOW IN CUBIC METERS PER DAY X 1000.

TABLE 37

DOLLAR NEEDS FOR CONSTRUCTION OF NEW TERTIARY TREATMENT FACILITIES, BY PLANT SIZE

Table 37 summarizes the projected costs, reported in January 1982 dollars, for the construction of new tertiary treatment plants to be built between 1982 and 2000. Table 37 is a direct extension of Table 36.

The summary indicates a total dollar need per State for new tertiary facilities. The State totals are broken down into dollar needs by flow range. The dollar needs of an individual plant are included in the total for the flow range shown which encompasses a plant's projected design capacity.

DECEMBER 31, 1982
TABLE 37

1982 NEEDS SURVEY

DOLLAR NEEDS FOR CONSTRUCTION OF NEW TERTIARY TREATMENT FACILITIES, BY PLANT SIZE

(THOUSANDS OF 1982 DOLLARS)

CUBIC METERS PER DAY X 1000: (MILLION GALLONS PER DAY)			======================== TOTAL PROJECTED DESIGN FLOW ========================						
			0-.40 (0-.10)	.401-1.9 (.11-.50)	1.901-4.0 (.51-1.05)	4.001-19 (1.06-5.01)	19.001-40 (5.02-10.56)	40.001-190 (10.57-50.19)	190.001+ (50.2+)
STATE	# OF PLANTS	STATE NEEDS	NEEDS	NEEDS	NEEDS	NEEDS	NEEDS	NEEDS	NEEDS
LABAMA	0	0	0	0	0	0	0	0	0
LASKA	0	0	0	0	0	0	0	0	0
RIZONA	0	0	0	0	0	0	0	0	0
RKANSAS	4	1,872	1,326	546	0	0	0	0	0
ALIFORNIA	0	0	0	0	0	0	0	0	0
OLORADO	0	0	0	0	0	0	0	0	0
ONNECTICUT	3	11,922	563	11,359	0	0	0	0	0
ELAWARE	0	0	0	0	0	0	0	0	0
IST. OF COLUM.	0	0	0	0	0	0	0	0	0
LORIDA	2	52,164	0	0	0	0	0	52,164	0
EORGIA	0	0	0	0	0	0	0	0	0
HAWAII	0	0	0	0	0	0	0	0	0
IDAHO	0	0	0	0	0	0	0	0	0
ILLINOIS	0	0	0	0	0	0	0	0	0
INDIANA	0	0	0	0	0	0	0	0	0
IOWA	0	0	0	0	0	0	0	0	0
KANSAS	0	0	0	0	0	0	0	0	0
KENTUCKY	1	1,307	0	1,307	0	0	0	0	0
LOUISIANA	2	11,315	0	0	0	0	11,315	0	0
MAINE	3	3,559	1,660	1,899	0	0	0	0	0
MARYLAND	1	0	0	0	0	0	0	0	0
MASSACHUSETTS	2	51,360	0	0	3,444	0	0	47,916	0
MICHIGAN	1	0	0	0	0	0	0	0	0
MINNESOTA	0	0	0	0	0	0	0	0	0
MISSISSIPPI	1	606	606	0	0	0	0	0	0
MISSOURI	0	0	0	0	0	0	0	0	0
MONTANA	0	0	0	0	0	0	0	0	0
NEBRASKA	0	0	0	0	0	0	0	0	0
NEVADA	0	0	0	0	0	0	0	0	0
NEW HAMPSHIRE	2	14,330	0	0	0	14,330	0	0	0
NEW JERSEY	4	10,081	0	0	0	10,081	0	0	0
NEW MEXICO	0	0	0	0	0	0	0	0	0
NEW YORK	45	82,044	30,855	14,895	5,276	31,818	0	0	0
NORTH CAROLINA	32	35,452	9,608	1,596	3,744	0	20,504	0	0
NORTH DAKOTA	0	0	0	0	0	0	0	0	0
OHIO	29	33,189	11,414	4,448	10,686	6,641	0	0	0
OKLAHOMA	0	0	0	0	0	0	0	0	0
OREGON	0	0	0	0	0	0	0	0	0
PENNSYLVANIA	5	6,734	580	3,692	2,462	0	0	0	0
RHODE ISLAND	0	0	0	0	0	0	0	0	0
SOUTH CAROLINA	3	7,669	760	0	0	6,909	0	0	0
SOUTH DAKOTA	0	0	0	0	0	0	0	0	0
TENNESSEE	0	0	0	0	0	0	0	0	0
TEXAS	1	0	0	0	0	0	0	0	0
UTAH	0	0	0	0	0	0	0	0	0
VERMONT	0	0	0	0	0	0	0	0	0
VIRGINIA	13	15,338	1,408	7,493	650	5,787	0	0	0
WASHINGTON	0	0	0	0	0	0	0	0	0
WEST VIRGINIA	3	8,603	0	8,603	0	0	0	0	0
WISCONSIN	0	0	0	0	0	0	0	0	0
WYOMING	0	0	0	0	0	0	0	0	0
AMERICAN SAMOA	0	0	0	0	0	0	0	0	0
GUAM	0	0	0	0	0	0	0	0	0
N. MARIANAS	0	0	0	0	0	0	0	0	0
PUERTO RICO	0	0	0	0	0	0	0	0	0
PAC. TR. TERR.	0	0	0	0	0	0	0	0	0
VIRGIN ISLANDS	0	0	0	0	0	0	0	0	0
U.S. TOTALS	157	347,545	58,780	55,838	26,262	75,566	31,819	100,080	0

TABLE 38

NATIONAL DOLLAR NEEDS FOR CHANGES IN EXISTING TREATMENT PLANTS

Table 38 summarizes the dollar needs for changes to treatment facilities which were in operation in 1982.

The table is divided into three sections. The first section details the planned changes and costs by present design level of treatment for all treatment facilities in operation in 1982. Sections two and three summarize the costs to upgrade and enlarge and upgrade presently operating facilities from the current level of treatment to the level projected in year 2000. A detailed explanation of the change categories is given in the discussion accompanying Table 3.

In the section illustrating Dollar Needs by Type of Planned Change, large needs are shown for plants listed in the Other and No Change columns. A number of situations are covered in these categories. One common situation is a treatment plant which will require a capital expenditure, such as for a new sludge digestor, but the degree of treatment and hydraulic capacity will not be changed.

The largest total dollar needs are for changes to existing secondary treatment plants. In section one it can be seen that over 7,900 secondary treatment facilities are currently in operation. The total dollar needs for these facilities between 1982 and 2000 are projected at over $10 billion. Section two indicates that almost 600 of the secondary treatment facilities in operation will be upgraded at a cost of almost $1 billion, and section three indicates that almost 900 of the secondary plants will be enlarged and upgraded at a cost of nearly $4 billion. The remaining secondary treatment dollar needs are for enlargements or other changes that do not involve an upgrade in the level of treatment.

The actual number of sites being upgraded and enlarged and upgraded from one level of treatment to another is summarized in Table 39.

DECEMBER 31, 1982
TABLE 38

1982 NEEDS SURVEY
NATIONAL DOLLAR NEEDS FOR CHANGES IN EXISTING TREATMENT PLANTS
(THOUSANDS OF 1982 DOLLARS)

TYPE	# OF PLANTS	TOTAL DOLLAR NEEDS	********************** DOLLAR NEEDS BY TYPE OF PLANNED CHANGE **********************							
			ENLARGE	UPGRADE	ENLARGE & UPGRADE	REPLACE	OTHER	ABANDON	ABANDON, RETAIN SEWERS	NO CHANGE
RAW DISCHARGE	188	1,296,219	0	1,296,219	0	0	0	0	0	0
LESS THAN SECONDARY	3,119	7,941,682	161,273	2,484,377	3,745,511	940,782	557,224	36,996	15,519	0
SECONDARY	7,946	10,099,385	2,914,088	982,321	3,972,569	885,290	1,337,652	0	7,465	0
ADVANCED SECONDARY	2,529	6,437,748	2,254,026	514,214	1,801,832	79,962	1,773,779	0	7,393	6,542
TERTIARY	231	260,642	143,899	2,346	64,557	0	38,633	0	0	11,207
NO DISCHARGE	1,600	448,756	286,648	3,328	27,522	95,747	35,511	0	0	0
TOTAL	15,613	26,484,432	5,759,934	5,282,805	9,611,991	2,001,781	3,742,799	36,996	30,377	17,749

TYPE	# OF PLANTS	TOTAL DOLLAR NEEDS	******************** DOLLAR NEEDS FOR PLANTS TO BE UPGRADED TO ********************				
			LESS THAN SECONDARY	SECONDARY	ADVANCED SECONDARY	TERTIARY	NO DISCHARGE
RAW DISCHARGE	188	1,296,219	0	1,183,965	78,966	17,641	15,647
LESS THAN SECONDARY	945	2,484,377	0	2,230,866	219,900	25,255	8,356
SECONDARY	580	982,321	0	34,047	863,980	58,090	26,204
ADVANCED SECONDARY	178	514,214	0	0	486,656	12,048	15,510
TERTIARY	11	2,346	0	0	0	2,346	0
NO DISCHARGE	8	3,328	0	210	0	0	3,118
TOTAL	1,910	5,282,805	0	3,449,088	1,649,502	115,380	68,835

TYPE	# OF PLANTS	TOTAL DOLLAR NEEDS	************** DOLLAR NEEDS FOR PLANTS TO BE ENLARGED AND UPGRADED TO **************				
			LESS THAN SECONDARY	SECONDARY	ADVANCED SECONDARY	TERTIARY	NO DISCHARGE
RAW DISCHARGE	0	0	0	0	0	0	0
LESS THAN SECONDARY	1,058	3,745,511	54,554	2,803,982	715,766	100,784	70,425
SECONDARY	871	3,972,569	0	110,083	3,195,330	408,812	258,344
ADVANCED SECONDARY	206	1,801,832	0	0	1,373,008	262,526	166,298
TERTIARY	10	64,557	0	0	0	46,307	18,250
NO DISCHARGE	16	27,522	0	16,508	9,418	0	1,596
TOTAL	2,161	9,611,991	54,554	2,930,573	5,293,522	818,429	514,913

TABLE 39

NATIONAL SUMMARY OF TREATMENT PLANT UPGRADES FOR PLANTS OPERATING IN 1982

Table 39 summarizes the upgrades projected for facilities in operation in 1982.

The Present Totals column gives the total number of facilities and total present design flow for plants that will undergo some type of upgrade between 1982 and 2000. The columns to the right of Present Totals show the number of facilities and the projected design flow after the upgrades.

For example, 1,451 existing secondary facilities with current design flows of approximately 13,673,000 cubic meters per day will be upgraded by the year 2000. The level to which each will be upgraded is listed to the right of the Present Total. The projected design flow of these plants following upgrade will total 18,700,000 cubic meters per day for all levels of treatment in 2000, which is the total of the flows listed as the second item under each projected level of treatment. The difference in flow between the projected 18,700,000 cubic meters per day and the present 13,673,000 cubic meters per day represents treatment plants being enlarged, as well as upgraded.

The costs involved to accomplish the various upgrades are summarized in Table 38.

All flows are reported in thousand cubic meters per day.

A facility may show an upgrade even though the general level of treatment is not changed. For example, a plant can upgrade from an advanced secondary level to an advanced secondary level. This can occur because the general levels of treatment represent a range of effluent values rather than a single value.

DECEMBER 31, 1982
TABLE 39

1982 NEEDS SURVEY
NATIONAL SUMMARY OF TREATMENT PLANT UPGRADES
FOR PLANTS OPERATING IN 1982

PRESENT LEVEL OF TREATMENT	PRESENT TOTALS	********** PROJECTED LEVEL OF TREATMENT FOR YEAR 2000 **********************				
		NO DISCHARGE	LESS THAN SECONDARY	SECONDARY	ADVANCED SECONDARY	TERTIARY
RAW DISCHARGE	188 SITES 161 KCMD	13 SITES 1 KCMD 0.8 % ROW 0.0 % COL 0.0 % ALL	0 SITES 0 KCMD 0.0 % ROW 0.0 % COL 0.0 % ALL	142 SITES 144 KCMD 89.6 % ROW 1.0 % COL 0.2 % ALL	29 SITES 13 KCMD 8.1 % ROW 0.0 % COL 0.0 % ALL	4 SITES 2 KCMD 1.2 % ROW 0.0 % COL 0.0 % ALL
LESS THAN SECONDARY	2,003 SITES 16,538 KCMD	85 SITES 199 KCMD 1.0 % ROW 12.7 % COL 0.3 % ALL	2 SITES 734 KCMD 3.8 % ROW 100.0 % COL 1.3 % ALL	1,512 SITES 13,023 KCMD 68.0 % ROW 92.9 % COL 23.7 % ALL	352 SITES 4,684 KCMD 24.4 % ROW 14.4 % COL 8.5 % ALL	52 SITES 500 KCMD 2.6 % ROW 8.1 % COL 0.9 % ALL
SECONDARY	1,451 SITES 13,673 KCMD	83 SITES 805 KCMD 4.3 % ROW 51.3 % COL 1.4 % ALL	0 SITES 0 KCMD 0.0 % ROW 0.0 % COL 0.0 % ALL	98 SITES 778 KCMD 4.1 % ROW 5.5 % COL 1.4 % ALL	1,133 SITES 15,546 KCMD 83.1 % ROW 47.8 % COL 28.2 % ALL	137 SITES 1,571 KCMD 8.4 % ROW 25.6 % COL 2.8 % ALL
ADVANCED SECONDARY	384 SITES 13,555 KCMD	25 SITES 442 KCMD 2.7 % ROW 28.2 % COL 0.8 % ALL	0 SITES 0 KCMD 0.0 % ROW 0.0 % COL 0.0 % ALL	0 SITES 0 KCMD 0.0 % ROW 0.0 % COL 0.0 % ALL	294 SITES 12,236 KCMD 76.1 % ROW 37.6 % COL 22.2 % ALL	65 SITES 3,391 KCMD 21.1 % ROW 55.3 % COL 6.1 % ALL
TERTIARY	21 SITES 491 KCMD	4 SITES 113 KCMD 14.5 % ROW 7.2 % COL 0.2 % ALL	0 SITES 0 KCMD 0.0 % ROW 0.0 % COL 0.0 % ALL	0 SITES 0 KCMD 0.0 % ROW 0.0 % COL 0.0 % ALL	0 SITES 0 KCMD 0.0 % ROW 0.0 % COL 0.0 % ALL	17 SITES 663 KCMD 85.4 % ROW 10.8 % COL 1.2 % ALL
NO DISCHARGE	24 SITES 58 KCMD	8 SITES 5 KCMD 6.2 % ROW 0.3 % COL 0.0 % ALL	0 SITES 0 KCMD 0.0 % ROW 0.0 % COL 0.0 % ALL	9 SITES 60 KCMD 69.2 % ROW 0.4 % COL 0.1 % ALL	7 SITES 21 KCMD 24.4 % ROW 0.0 % COL 0.0 % ALL	0 SITES 0 KCMD 0.0 % ROW 0.0 % COL 0.0 % ALL
TOTALS	4,071 SITES 44,478 KCMD	218 SITES 1,567 KCMD 2.8 % ROW 100.0 % COL 2.8 % ALL	2 SITES 734 KCMD 1.3 % ROW 100.0 % COL 1.3 % ALL	1,761 SITES 14,007 KCMD 25.4 % ROW 100.0 % COL 25.4 % ALL	1,815 SITES 32,502 KCMD 59.1 % ROW 100.0 % COL 59.1 % ALL	275 SITES 6,129 KCMD 11.1 % ROW 100.0 % COL 11.1 % ALL

NOTES: 1. PERCENTAGES ARE FUNCTION OF FLOW IN ROW, COLUMN AND OVERALL(ALL).

2. FLOW VALUES ARE PROJECTED DESIGN FLOWS IN CUBIC METERS PER DAY X 1000 (KCMD).

TABLE 40

ANALYSIS OF LIQUID EFFLUENT DISPOSAL
NUMBER OF RESPONSES

Table 40 summarizes the methods utilized by municipal sewerage authorities to dispose of the liquid effluents generated by treatment works. The summary describes the current situation (1982) and the changes expected to occur.

The Current Status portion of the table lists the liquid effluent disposal methods reported in the Survey. The total methods in operation are greater than the total number of facilities because more than one method may be employed by a treatment facility. The lower portion of the table provides a breakdown of the various effluent disposal methods and the changes projected to occur. A brief explanation of each disposal method is given below:

Outfall to Surface Waters: Direct discharge to a body of fresh water.

Ocean Outfall: Direct discharge to an ocean, estuary, or bay.

Groundwater Recharge: Disposal of effluent via deep well or other methods in order to replenish a groundwater aquifer for the purpose of municipal, agricultural or industrial reuse, or to control salt water intrusion or land subsidence.

Other Land Disposal: Disposal of effluent on public or private land for other than agricultural purposes (municipal golf course watering, highway right-of-way maintenance, etc). No effluent recovery is practiced.

Recycling and Reuse: Direct reuse of effluent for purposes other than irrigation in an industrial process, such as cooling or quenching. Also included is reuse or reclamation of the water for other than irrigation.

Septic Tank Field: Discharge of untreated waste to a septic tank with effluent disposal to a leach field or cesspool.

Other: Any method of disposal not described elsewhere in this section.

No Discharge: No discharge to surface or groundwaters such as complete retention in an evaporation lagoon.

Spray Irrigation: Reuse of treated effluent in agriculture by spraying.

Ditch Irrigation: Reuse of treated effluent in agriculture using a ditch, swale, or other surface flow method.

To Other WWT Plants: Direct transmission of treated effluent from a treatment plant, or raw wastes from a separate collection system, to another treatment facility for further treatment prior to final disposal.

The numbers shown for the septic tank fields refer to the number of communities or authorities that use septic tanks. The numbers are high because of the need to replace, on a national basis, many failing septic systems with better treatment systems. In contrast, fewer of the other types of effluent disposal require change. Septic tank fields and treatment plants that discharge to surface waters are the most common effluent disposal techniques and, therefore, more of these authorities/facilities will be undergoing changes of some type. This is evident by the large total number of changes for these disposal methods shown in the lower portion of the table.

The values listed in the rows and columns of this table are not necessarily additive or cumulative. Any one facility may have a variety of effluent disposal methods and any one of the methods can be undergoing change independently.

DECEMBER 31, 1982
TABLE 40

1982 NEEDS SURVEY

ANALYSIS OF LIQUID EFFLUENT DISPOSAL

NUMBER OF RESPONSES

UNITED STATES TOTAL

CURRENT STATUS

IN OPERATION	UNDER CONSTRUCTION	REQUIRED, BUT NOT YET APPROVED OR FUNDED
42,171	1,033	10,014

******DISPOSAL METHOD******	******************NATURE OF PROJECTED CHANGE********************								***TOTAL***
	ENLARGE	UPGRADE	ENLARGE AND UPGRADE	NEW CONST.	REPLACE	ABANDON	NO CHANGE	OTHER	
OUTFALL TO SURFACE WATERS	414	297	377	6,078	259	1,970	10,317	30	19,742
OCEAN OUTFALL	10	2	5	142	23	46	215	0	443
GROUND WATER RECHARGE	4	2	1	55	3	25	113	0	203
OTHER LAND DISPOSAL	0	1	1	68	0	6	26	0	102
RECYCLING AND REUSE	3	1	1	51	0	4	44	0	104
SEPTIC TANK FIELD	1	3,161	3	174	5	15,264	4,428	1	23,037
OTHER	1	0	1	17	1	15	29	0	64
NO DISCHARGE	9	2	1	643	2	272	834	0	1,763
SPRAY IRRIGATION	19	1	4	504	0	28	461	0	1,017
DITCH IRRIGATION	2	5	4	98	3	16	279	1	408
TO OTHER WWT PLANTS	212	20	8	3,108	7	40	3,458	6	6,859
TOTAL	675	3,492	406	10,938	303	17,686	20,204	38	53,742

TABLE 41

SUMMARY OF TREATMENT AND SLUDGE HANDLING PROCESSES
NUMBER OF PLANTS AND ASSOCIATED FLOW
UNITED STATES TOTAL

Table 41 summarizes the inventory of unit processes that was compiled during the 1982 Survey. Items 1 through 64 refer to the liquid line, items 65 through 95 refer to the sludge line, and items 96 through AD list miscellaneous processes and types of controls. Table 42 expands the data available for each of the 112 items.

Three categories of information were developed for each item (unit process). For each process, information is provided as to whether a process is Now in Use, Under Construction, or Required But Not Yet Funded. In each category the total number of processes is listed along with an associated total flow. For the Now In Use category, total flow was compiled from the present design flow of the facilities. For the Under Construction and Required But Not Yet Funded categories, total flow was compiled from the projected design flows.

A unit process as defined here includes the complete process. For example, activated sludge includes the aeration basin, associated blowers and other integral mechanical equipment, and the secondary clarifier. These items are not listed separately.

Multiple or parallel processes are counted as one process for any single facility. For example, if a facility has four aerobic digesters, the number of aerobic digesters counted in this summary is one, not four. Therefore, the Number column denotes the number of plants using that process.

DECEMBER 31, 1982
TABLE 41

1982 NEEDS SURVEY

SUMMARY OF TREATMENT AND SLUDGE HANDLING PROCESSES
NUMBERS OF PLANTS AND ASSOCIATED FLOW
(FLOW IN THOUSANDS OF CUBIC METERS PER DAY)
UNITED STATES TOTAL

	NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT YET FUNDED	
	NUMBER	FLOW	NUMBER	FLOW	NUMBER	FLOW
TREATMENT PROCESSES						
1. PUMPING,RAW WASTEWATER	6,839	96,814	281	1,923	3,391	8,276
2. PRELIMINARY TREATMENT - BAR SCREEN	9,234	115,725	354	2,518	5,847	11,816
3. PRELIMINARY TREATMENT - GRIT REMOVAL	4,453	99,603	228	2,330	1,673	10,713
4. PRELIMINARY TREATMENT - COMMINUTORS	4,107	46,013	202	1,531	1,435	5,805
5. PRELIMINARY TREATMENT - OTHERS	73	2,487	5	43	12	78
6. SCUM REMOVAL	408	25,114	13	1,601	42	1,344
7. FLOW EQUALIZATION BASINS	586	11,676	90	1,016	494	13,011
8. PREAERATION	427	25,383	21	514	62	2,282
9. PRIMARY SEDIMENTATION	5,300	108,487	134	1,712	1,869	8,282
10. TRICKLING FILTER - ROCK MEDIA	2,542	21,021	9	123	44	500
11. TRICKLING FILTER - PLASTIC MEDIA	73	2,115	15	394	55	1,341
12. TRICKLING FILTER - REDWOOD SLATS	46	1,064	1	11	11	131
13. TRICKLING FILTER - OTHER MEDIA	14	381	0	0	6	482
14. ACTIVATED SLUDGE - CONVENTIONAL	2,349	66,586	124	3,225	1,886	11,416
15. ACTIVATED SLUDGE - HIGH RATE	29	3,161	4	799	9	216
16. ACTIVATED SLUDGE - CONTACT STABILIZATION	1,272	13,284	32	412	301	1,396
17. ACTIVATED SLUDGE - EXTENDED AERATION	2,038	6,946	126	585	1,514	2,409
18. PURE OXYGEN ACTIVATED SLUDGE	81	11,999	10	1,865	27	4,748
19. BIO-DISC (ROTATING BIOLOGICAL FILTER)	258	2,352	110	1,787	354	3,323
20. OXIDATION DITCH USING MECHANICAL AERATORS	632	1,579	136	382	335	1,548
21. CLARIFICATION USING TUBE SETTLERS	45	460	3	18	12	16
22. SECONDARY CLARIFICATION	907	9,159	74	883	361	2,878
23. BIOLOGICAL NITRIFICATION - SEPARATE STAGE	195	10,123	63	683	402	7,116
24. BIOLOGICAL NITRIFICATION - BOD & NIT.	551	12,250	130	2,182	1,352	9,067
25. BIOLOGICAL DENITRIFICATION	40	1,424	8	40	51	1,763
26. POST AERATION (REAERATION)	926	14,847	185	1,975	952	7,483
27. MICROSTRAINERS - PRIMARY	33	1,509	10	67	15	186
28. MICROSTRAINERS - SECONDARY	85	2,495	17	185	40	802
29. SAND FILTERS	1,443	11,711	227	3,668	2,948	10,904
30. MIX-MEDIA FILTERS (SAND AND COAL)	360	9,795	52	1,078	173	6,288
31. OTHER FILTRATIONS	41	840	8	280	25	901
32. ACTIVATED CARBON - GRANULAR	25	1,375	6	328	13	1,369
33. ACTIVATED CARBON - POWDERED	3	297	4	293	2	37
34. TWO STAGE LIME TREATMENT OF RAW WASTEWATER	16	493	1	6	9	282
35. TWO STAGE TERTIARY LIME TREATMENT	19	627	4	162	10	246
36. SINGLE STAGE LIME TREATMENT OF RAW WASTEWATER	29	526	5	176	8	401
37. SINGLE STAGE TERTIARY LIME TREATMENT	65	1,673	12	1,338	53	978
38. RECARBONATION	50	1,295	7	412	31	968
39. NEUTRALIZATION	17	204	0	0	15	196
40. ALUM ADDITION TO PRIMARY	77	2,286	3	22	35	813
41. ALUM ADDITION TO SECONDARY	421	8,911	61	1,142	458	6,826
42. ALUM ADDITION TO SEPARATE STAGE TERTIARY	79	1,927	11	128	48	383
43. FERRI-CHLORIDE ADDITION TO PRIMARY	52	3,749	2	27	7	326
44. FERRI-CHLORIDE ADDITION TO SECONDARY	176	5,889	14	76	62	361
45. FERRI-CHLORIDE ADDITION TO SEPARATE STAGE TERTIARY	33	257	3	1,193	12	391
46. OTHER CHEMICAL ADDITIONS	89	3,761	12	2,583	24	648
47. ION EXCHANGE	1	0	0	0	3	40
48. BREAKPOINT CHLORINATION	10	988	2	116	11	1,682
49. AMONIA STRIPPING	5	338	0	0	2	2
50. DECHLORINATION	203	3,343	42	511	192	3,486
51. CHLORINATION FOR DISINFECTION	8,487	92,081	485	2,403	6,698	19,554
52. OZONATION FOR DISINFECTION	30	1,709	10	532	16	326
53. OTHER DISINFECTION	9	4,701	19	57	29	305
54. LAND TREATMENT OF PRIMARY EFFLUENT	76	91	14	12	29	36
55. LAND TREATMENT OF SECONDARY EFFLUENT (30/30)	572	3,183	84	395	477	2,450
56. LAND TREATMENT OF INTERIMEDIATE EFFLUENT	180	350	23	27	91	160
57. STABILIZATION PONDS	5,174	12,122	179	250	3,166	3,173
58. AERATED LAGOONS	1,267	5,135	159	371	1,611	1,469
59. OUTFALL PUMPING	226	13,884	47	2,424	143	3,842
60. OUTFALL DIFFUSER	93	5,764	8	156	37	3,573
61. EFFLUENT TO OTHER PLANTS	18	247	3	51	15	448
62. EFFLUENT OUTFALL	13,724	127,937	335	3,066	5,799	10,372
63. OTHER TREATMENT	436	5,218	30	489	180	1,871
64. RECALCINATION	26	1,954	2	45	10	285
SLUDGE HANDLING METHODS						
65. AEROBIC DIGESTION - AIR	3,349	18,837	235	2,966	1,875	5,775
66. AEROBIC DIGESTION - OXYGEN	51	509	7	66	12	360
67. COMPOSTING	28	3,975	18	192	27	1,605
68. ANAERODIC DIGESTION	4,189	84,971	98	1,815	997	7,560
69. SLUDGE LAGOONS	611	16,651	26	386	136	2,180
70. HEAT TREATMENT	163	13,848	10	2,611	29	3,190
71. CHLORINE OXIDATION OF SLUDGE (PURIFAX)	40	1,522	5	87	7	79
72. LIME STABILIZATION	74	3,783	9	240	30	616
73. WET AIR OXIDATION	51	3,248	1	37	3	297
74. AIR DRYING	6,728	51,346	216	1,138	2,636	6,298
75. DEWATERING - MECHANICAL - VACUUM FILTER	1,173	54,190	79	3,183	393	8,052
76. DEWATERING - MECHANICAL - CENTRIFUGE	242	14,069	17	626	54	10,587
77. DEWATERING - MECHANICAL - FILTER PRESS	151	5,504	43	4,026	136	7,309
78. DEWATERING - OTHERS	36	1,841	3	15	33	1,565
79. GRAVITY THICKENING	785	45,288	74	2,951	322	7,205
80. AIR FLOTATION THICKENING	221	15,607	48	2,597	108	9,065
81. INCINERATION - MULTIPLE HEARTH	301	27,371	14	1,630	63	7,913
82. INCINERATION - FLUIDIZED BEDS	22	1,336	1	22	3	1,097
83. INCINERATION - ROTARY KILN	8	555	0	0	2	1,178
84. INCINERATION - OTHERS	15	1,101	3	314	1	283
85. PYROLYSIS	2	97	0	0	5	89
86. CO-INCINERATION WITH SOLID WASTE	7	248	4	392	4	91
87. CO-PYROLYSIS WITH SOLID WASTE	12	339	0	0	1	171
88. CO-INCINERATION - OTHERS	2	20	0	0	1	37
89. LAND FILL	7,452	89,096	245	3,358	2,830	11,175
90. LAND SPREADING OF LIQUID SLUDGE	1,097	11,530	47	274	363	1,232
91. LAND SPREADING OF THICKENED SLUDGE	1,366	23,315	69	1,673	270	3,729
92. TRENCHING	8	1,243	1	7	2	0
93. OCEAN DUMPING	49	11,258	0	0	8	147
94. OTHER SLUDGE HANDLING	281	13,043	25	1,412	137	10,607
95. DIGEST GAS UTILIZATION FACILITIES	289	13,936	10	219	46	5,591
MISCELLANEOUS						
96. CONTROL/LAB.MAINTENANCE BUILDINGS	8,447	107,263	375	2,101	5,447	11,323
97. FULLY AUTOMATED USING DIGITAL CONTROL	46	6,875	7	2,662	15	691
98. FULLY AUTOMATED USING ANALOG CONTROLS	80	6,336	1	28	12	1,365
99. SEMI AUTOMATED PLANT	10,611	111,299	362	1,982	4,355	10,344
A1. MANUALLY OPERTED AND CONTROLLED PLANT	4,394	9,767	122	144	2,742	3,166
A2. PACKAGE PLANT	1,672	1,886	75	62	1,285	670
A3. SEMI-PACKAGE PLANT	1,883	6,199	72	120	866	1,364
A4. CUSTOM BUILT PLANT	11,763	125,016	305	1,857	5,859	10,897
A5. IMHOFF TANKS	422	406	4	1	6	5
A6. SEPTIC TANKS	105	23	11	1	42	11
A7. ELECTRODIALYSIS	0	0	0	0	0	0
A8. REVERSE OSMOSIS	0	0	0	0	0	0
A9. PRESSURE FILTERS	3	17	0	0	2	15
AA. SEEPAGE LAGOONS	826	934	42	30	499	390
AB. ROCK FILTERS	4	25	0	0	10	12
AC. POLYMER ADDITION TO LIQUID STREAM	39	4,746	6	25	78	807
AD. POLYMER ADDITION TO SLUDGE STREAM	34	2,899	4	128	86	2,842

TABLE 42

PROJECTED CHANGE IN TREATMENT PROCESS USE NUMBERS OF PLANTS AND ASSOCIATED FLOW

Table 42 is a national summary of the number of plants, the total flow, and the projected change information collected pertaining to unit processes. Table 42 is an expansion of the summary presented in Table 41 with each unit process presented in greater detail. Table 42 includes for each unit process the total number installed throughout the nation. As some of these unit processes are installed in plants but are not presently in use, the totals in Table 42 may be greater than those shown in Table 41 for a given process. Table 41 does not include the unit processes that are installed but for some reason are not presently being used.

For easy reference the summaries are presented in the same sequence as in Table 41. For instance, preaeration which is item 8 in Table 41, can be found under item 42-8 in this table. The last number refers to the Table 41 item number.

Flows associated with each unit process are the sum of the total plant flows for all the facilities using that particular process. All flows are given in thousand cubic meters per day. The present design flow was used for processes shown under the Now In Use column. The projected design flow was used for processes in the Under Construction and Required But Not Yet Funded columns.

The information for each unit process is divided into two general categories shown in the table as Type 1 and Type 2 Estimates. Type 1 information was obtained from preliminary engineering designs. Type 2 information was generally developed using EPA cost estimating procedures together with commonly accepted treatment practices for the geographic area.

The projected change codes in column one are defined in the narrative accompanying Table 3.

1982 NEEDS SURVEY
PROJECTED CHANGE IN TREATMENT PROCESS USE
NUMBERS OF PLANTS AND ASSOCIATED FLOW
(FLOW IN THOUSANDS OF CUBIC METERS PER DAY)

42-1 PUMPING,RAW WASTEWATER

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	1,204	16,709	588	12,513	0	0	0	0	616	4,197	0	0	0	0
UPGRADE	221	4,152	176	3,531	0	0	0	0	45	620	0	0	0	0
ENLARGE AND UPGRADE	402	6,131	336	5,935	0	0	0	0	66	196	0	0	0	0
NEW PROCESS	3,695	10,354	0	0	283	1,922	857	6,030	0	0	2	1	2,553	2,403
REPLACE	313	5,878	245	5,797	0	0	0	0	68	82	0	0	0	0
ABANDON	692	3,652	675	3,574	0	0	0	0	17	77	0	0	0	0
NO CHANGE	4,020	60,884	3,459	56,430	0	0	0	0	561	4,455	0	0	0	0
OTHER	3	65	3	65	0	0	0	0	0	0	0	0	0	0
TOTAL	10,550	107,829	5,482	87,847	283	1,922	857	6,030	1,373	9,629	2	1	2,553	2,403

42-2 PRELIMINARY TREATMENT - BAR SCREEN

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	1,387	21,382	678	16,852	0	0	0	0	709	4,531	0	0	0	0
UPGRADE	261	4,118	181	3,874	0	0	0	0	80	243	0	0	0	0
ENLARGE AND UPGRADE	423	4,882	326	4,620	0	0	0	0	97	262	0	0	0	0
NEW PROCESS	6,243	13,737	0	0	356	2,521	1,182	7,658	0	0	1	0	4,704	3,563
REPLACE	432	3,903	308	3,731	0	0	0	0	124	171	0	0	0	0
ABANDON	921	4,309	897	4,242	0	0	0	0	24	67	0	0	0	0
NO CHANGE	5,827	77,783	5,025	68,535	0	0	0	0	802	9,288	0	0	0	0
OTHER	1	12	1	12	0	0	0	0	0	0	0	0	0	0
TOTAL	15,495	130,128	7,416	101,860	356	2,521	1,182	7,658	1,836	14,557	1	0	4,704	3,563

42-3 PRELIMINARY TREATMENT - GRIT REMOVAL

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	700	17,150	405	13,396	0	0	0	0	295	3,753	0	0	0	0
UPGRADE	145	4,914	107	4,706	0	0	0	0	38	207	0	0	0	0
ENLARGE AND UPGRADE	283	5,657	242	5,438	0	0	0	0	41	219	0	0	0	0
NEW PROCESS	1,896	13,212	0	0	221	2,341	666	9,102	0	0	0	0	1,009	1,769
REPLACE	193	3,686	160	3,576	0	0	0	0	33	110	0	0	0	0
ABANDON	370	2,944	359	2,921	0	0	0	0	11	23	0	0	0	0
NO CHANGE	2,768	65,347	2,443	57,136	0	0	0	0	325	8,211	0	0	0	0
OTHER	2	173	2	173	0	0	0	0	0	0	0	0	0	0
TOTAL	6,357	113,084	3,718	87,347	221	2,341	666	9,102	743	12,525	0	0	1,009	1,769

42-4 PRELIMINARY TREATMENT - COMMINUTORS

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	543	7,553	317	5,027	0	0	0	0	226	2,526	0	0	0	0
UPGRADE	134	933	88	836	0	0	0	0	46	97	0	0	0	0
ENLARGE AND UPGRADE	261	2,458	205	2,245	0	0	0	0	56	212	0	0	0	0
NEW PROCESS	1,669	7,056	0	0	202	1,530	585	4,102	0	0	1	0	881	1,423
REPLACE	167	1,015	148	911	0	0	0	0	19	104	0	0	0	0
ABANDON	375	2,095	367	2,079	0	0	0	0	8	15	0	0	0	0
NO CHANGE	2,631	31,983	2,316	28,810	0	0	0	0	315	3,174	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	5,780	53,095	3,441	39,909	202	1,530	585	4,102	670	6,130	1	0	881	1,423

42-5 PRELIMINARY TREATMENT - OTHERS

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	5	49	2	29	0	0	0	0	3	19	0	0	0	0
UPGRADE	2	20	2	20	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	2	5	2	5	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	18	122	0	0	5	43	12	78	0	0	0	0	1	0
REPLACE	3	706	3	706	0	0	0	0	0	0	0	0	0	0
ABANDON	23	85	13	69	0	0	0	0	10	16	0	0	0	0
NO CHANGE	40	1,619	29	1,402	0	0	0	0	11	216	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	93	2,610	51	2,235	5	43	12	78	24	252	0	0	1	0

42-6 SCUM REMOVAL

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	79	2,783	38	1,628	0	0	0	0	41	1,155	0	0	0	0
UPGRADE	16	9,385	14	9,377	0	0	0	0	2	8	0	0	0	0
ENLARGE AND UPGRADE	15	815	13	809	0	0	0	0	2	5	0	0	0	0
NEW PROCESS	55	2,945	0	0	13	1,601	29	1,288	0	0	0	0	13	55
REPLACE	4	51	2	49	0	0	0	0	2	1	0	0	0	0
ABANDON	32	612	31	611	0	0	0	0	1	0	0	0	0	0
NO CHANGE	255	11,466	220	8,785	0	0	0	0	35	2,680	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	456	28,061	318	21,262	13	1,601	29	1,288	83	3,852	0	0	13	55

42-7 FLOW EQUALIZATION BASINS

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	63	1,745	33	607	0	0	0	0	30	1,138	0	0	0	0
UPGRADE	11	150	10	147	0	0	0	0	1	2	0	0	0	0
ENLARGE AND UPGRADE	13	235	12	230	0	0	0	0	1	5	0	0	0	0
NEW PROCESS	548	14,140	0	0	89	900	325	11,705	0	0	2	115	132	1,419
REPLACE	10	67	10	67	0	0	0	0	0	0	0	0	0	0
ABANDON	30	124	30	124	0	0	0	0	0	0	0	0	0	0
NO CHANGE	382	9,269	355	8,950	0	0	0	0	27	319	0	0	0	0
OTHER	1	97	1	97	0	0	0	0	0	0	0	0	0	0
TOTAL	1,058	25,832	451	10,225	89	900	325	11,705	59	1,465	2	115	132	1,419

42-8 PREAERATION

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	60	3,452	33	1,810	0	0	0	0	27	1,642	0	0	0	0
UPGRADE	20	447	15	366	0	0	0	0	5	81	0	0	0	0
ENLARGE AND UPGRADE	22	727	20	670	0	0	0	0	2	57	0	0	0	0
NEW PROCESS	84	2,736	0	0	21	514	55	2,100	0	0	0	0	8	120
REPLACE	8	730	6	725	0	0	0	0	2	4	0	0	0	0
ABANDON	45	2,168	44	2,165	0	0	0	0	1	2	0	0	0	0
NO CHANGE	275	18,290	251	17,828	0	0	0	0	24	462	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	514	28,554	369	23,566	21	514	55	2,100	61	2,251	0	0	8	120

42-9 PRIMARY SEDIMENTATION

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	834	17,320	483	12,370	0	0	0	0	351	4,950	0	0	0	0
UPGRADE	310	8,444	228	5,946	0	0	0	0	82	2,498	0	0	0	0
ENLARGE AND UPGRADE	434	13,264	356	11,328	0	0	0	0	78	1,935	0	0	0	0
NEW PROCESS	1,714	10,215	0	0	135	1,723	409	6,533	0	0	1	0	1,169	1,959
REPLACE	186	3,682	159	3,642	0	0	0	0	27	40	0	0	0	0
ABANDON	876	3,915	805	3,799	0	0	0	0	71	115	0	0	0	0
NO CHANGE	2,666	62,395	2,373	58,659	0	0	0	0	293	3,736	0	0	0	0
OTHER	6	157	6	157	0	0	0	0	0	0	0	0	0	0
TOTAL	7,026	119,395	4,410	95,904	135	1,723	409	6,533	902	13,277	1	0	1,169	1,959

42-10 TRICKLING FILTER - ROCK MEDIA

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	176	1,925	102	1,453	0	0	0	0	74	472	0	0	0	0
UPGRADE	275	3,387	193	2,875	0	0	0	0	82	512	0	0	0	0
ENLARGE AND UPGRADE	198	1,493	151	1,332	0	0	0	0	47	160	0	0	0	0
NEW PROCESS	54	631	0	0	9	123	28	428	0	0	0	0	17	79
REPLACE	100	662	75	585	0	0	0	0	25	76	0	0	0	0
ABANDON	897	3,902	801	3,593	0	0	0	0	96	309	0	0	0	0
NO CHANGE	892	9,725	786	8,478	0	0	0	0	106	1,246	0	0	0	0
OTHER	8	132	8	132	0	0	0	0	0	0	0	0	0	0
TOTAL	2,600	21,860	2,116	18,451	9	123	28	428	430	2,777	0	0	17	79

42-11 TRICKLING FILTER - PLASTIC MEDIA

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	7	208	3	37	0	0	0	0	4	171	0	0	0	0
UPGRADE	1	7	1	7	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	5	28	5	28	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	70	1,735	0	0	15	394	50	1,320	0	0	0	0	5	20
REPLACE	1	0	1	0	0	0	0	0	0	0	0	0	0	0
ABANDON	5	14	4	12	0	0	0	0	1	1	0	0	0	0
NO CHANGE	54	1,856	54	1,856	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	143	3,851	68	1,942	15	394	50	1,320	5	173	0	0	5	20

42-12 TRICKLING FILTER - REDWOOD SLATS

	PROCESS TOTAL		************** TYPE 1 ESTIMATE				**************		************** TYPE 2 ESTIMATE				**************	
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	6	140	2	27	0	0	0	0	4	112	0	0	0	0
UPGRADE	1	2	1	2	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	1	1	1	1	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	12	142	0	0	1	11	11	131	0	0	0	0	0	0
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	4	156	3	156	0	0	0	0	1	0	0	0	0	0
NO CHANGE	34	763	32	663	0	0	0	0	2	99	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	58	1,206	39	851	1	11	11	131	7	212	0	0	0	0

42-13 TRICKLING FILTER - OTHER MEDIA

	PROCESS TOTAL		************** TYPE 1 ESTIMATE				**************		************** TYPE 2 ESTIMATE				**************	
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	1	4	1	4	0	0	0	0	0	0	0	0	0	0
UPGRADE	1	18	1	18	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	6	452	0	0	0	0	5	451	0	0	0	0	1	0
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	2	8	2	8	0	0	0	0	0	0	0	0	0	0
NO CHANGE	10	348	10	348	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	20	833	14	381	0	0	5	451	0	0	0	0	1	0

42-14 ACTIVATED SLUDGE - CONVENTIONAL

	PROCESS TOTAL		************** TYPE 1 ESTIMATE				**************		************** TYPE 2 ESTIMATE				**************	
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	374	9,123	188	5,404	0	0	0	0	186	3,719	0	0	0	0
UPGRADE	149	10,054	110	9,526	0	0	0	0	39	528	0	0	0	0
ENLARGE AND UPGRADE	186	8,005	146	7,584	0	0	0	0	40	420	0	0	0	0
NEW PROCESS	1,213	14,755	0	0	124	3,225	383	9,530	0	0	0	0	706	2,000
REPLACE	30	2,730	28	1,140	0	0	0	0	2	1,590	0	0	0	0
ABANDON	406	4,276	376	3,999	0	0	0	0	30	277	0	0	0	0
NO CHANGE	1,207	32,410	1,121	30,505	0	0	0	0	86	1,904	0	0	0	0
OTHER	1	3	1	3	0	0	0	0	0	0	0	0	0	0
TOTAL	3,566	81,360	1,970	58,164	124	3,225	383	9,530	383	8,440	0	0	706	2,000

42-15 ACTIVATED SLUDGE - HIGH RATE

	PROCESS TOTAL		************** TYPE 1 ESTIMATE				**************		************** TYPE 2 ESTIMATE				**************	
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	5	249	5	249	0	0	0	0	0	0	0	0	0	0
UPGRADE	2	480	1	416	0	0	0	0	1	64	0	0	0	0
ENLARGE AND UPGRADE	3	892	3	878	0	0	0	0	2	14	0	0	0	0
NEW PROCESS	15	1,016	0	0	6	799	7	160	0	0	0	0	2	55
REPLACE	1	22	1	22	0	0	0	0	0	0	0	0	0	0
ABANDON	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO CHANGE	16	1,516	16	1,516	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	44	4,178	26	3,083	6	799	7	160	3	78	0	0	2	55

42-16 ACTIVATED SLUDGE - CONTACT STABILIZATION

	PROCESS TOTAL		************** TYPE 1 ESTIMATE				**************		************** TYPE 2 ESTIMATE				**************	
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	247	5,694	80	5,042	0	0	0	0	167	652	0	0	0	0
UPGRADE	79	606	53	536	0	0	0	0	26	69	0	0	0	0
ENLARGE AND UPGRADE	88	743	49	587	0	0	0	0	39	155	0	0	0	0
NEW PROCESS	334	1,820	0	0	32	422	84	1,114	0	0	1	0	217	282
REPLACE	11	73	7	71	0	0	0	0	4	2	0	0	0	0
ABANDON	199	759	191	742	0	0	0	0	8	16	0	0	0	0
NO CHANGE	645	5,320	603	5,110	0	0	0	0	42	209	0	0	0	0
OTHER	3	5	2	4	0	0	0	0	1	0	0	0	0	0
TOTAL	1,686	15,024	985	12,096	32	422	84	1,114	287	1,107	1	0	217	282

42-17 ACTIVATED SLUDGE - EXTENDED AERATION

	PROCESS TOTAL		************** TYPE 1 ESTIMATE				**************		************** TYPE 2 ESTIMATE				**************	
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	271	1,189	87	924	0	0	0	0	184	264	0	0	0	0
UPGRADE	109	292	51	241	0	0	0	0	58	51	0	0	0	0
ENLARGE AND UPGRADE	128	620	65	554	0	0	0	0	63	65	0	0	0	0
NEW PROCESS	1,641	2,994	0	0	123	584	369	1,508	0	0	3	1	1,146	900
REPLACE	16	181	16	181	0	0	0	0	0	0	0	0	0	0
ABANDON	310	463	298	441	0	0	0	0	12	21	0	0	0	0
NO CHANGE	1,195	4,190	1,120	3,999	0	0	0	0	75	190	0	0	0	0
OTHER	2	8	2	8	0	0	0	0	0	0	0	0	0	0
TOTAL	3,672	9 740	1,639	6,351	123	584	369	1,508	392	594	3	1	1,146	900

42-18 PURE OXYGEN ACTIVATED SLUDGE

	PROCESS TOTAL		************** TYPE 1 ESTIMATE **************						************** TYPE 2 ESTIMATE **************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	16	2,180	10	1,237	0	0	0	0	6	942	0	0	0	0
UPGRADE	5	618	5	618	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	5	3,828	5	3,828	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	38	6,746	0	0	10	1,865	27	4,867	0	0	0	0	1	13
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	7	184	6	170	0	0	0	0	1	14	0	0	0	0
NO CHANGE	48	5,186	46	4,599	0	0	0	0	2	586	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	119	18,743	72	10,455	10	1,865	27	4,867	9	1,543	0	0	1	13

42-19 BIO-DISC (ROTATING BIOLOGICAL FILTER)

	PROCESS TOTAL		************** TYPE 1 ESTIMATE **************						************** TYPE 2 ESTIMATE **************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	17	339	10	196	0	0	0	0	7	142	0	0	0	0
UPGRADE	7	20	6	19	0	0	0	0	1	0	0	0	0	0
ENLARGE AND UPGRADE	6	105	5	37	0	0	0	0	1	68	0	0	0	0
NEW PROCESS	465	5,110	0	0	111	1,787	331	3,241	0	0	0	0	23	81
REPLACE	3	4	3	4	0	0	0	0	0	0	0	0	0	0
ABANDON	5	16	4	9	0	0	0	0	1	6	0	0	0	0
NO CHANGE	220	1,866	216	1,858	0	0	0	0	4	8	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	723	7,463	244	2,126	111	1,787	331	3,241	14	226	0	0	23	81

42-20 OXIDATION DITCH USING MECHANICAL AERATORS

	PROCESS TOTAL		************** TYPE 1 ESTIMATE **************						************** TYPE 2 ESTIMATE **************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	92	241	30	132	0	0	0	0	62	108	0	0	0	0
UPGRADE	22	51	10	32	0	0	0	0	12	19	0	0	0	0
ENLARGE AND UPGRADE	9	20	5	15	0	0	0	0	4	5	0	0	0	0
NEW PROCESS	671	1,927	0	0	136	382	342	1,278	0	0	0	0	193	266
REPLACE	2	19	2	19	0	0	0	0	0	0	0	0	0	0
ABANDON	15	18	12	13	0	0	0	0	3	4	0	0	0	0
NO CHANGE	492	1,227	464	1,170	0	0	0	0	28	56	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1,303	3,506	523	1,384	136	382	342	1,278	109	194	0	0	193	266

42-21 CLARIFICATION USING TUBE SETTLERS

	PROCESS TOTAL		************** TYPE 1 ESTIMATE **************						************** TYPE 2 ESTIMATE **************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	8	39	6	12	0	0	0	0	2	27	0	0	0	0
UPGRADE	3	31	1	7	0	0	0	0	2	23	0	0	0	0
ENLARGE AND UPGRADE	4	49	4	49	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	15	34	0	0	3	18	8	7	0	0	0	0	4	9
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	2	9	2	9	0	0	0	0	0	0	0	0	0	0
NO CHANGE	28	330	27	326	0	0	0	0	1	3	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	60	494	40	405	3	18	8	7	5	54	0	0	4	9

42-22 SECONDARY CLARIFICATION

	PROCESS TOTAL		************** TYPE 1 ESTIMATE **************						************** TYPE 2 ESTIMATE **************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	87	584	62	526	0	0	0	0	25	58	0	0	0	0
UPGRADE	60	462	45	422	0	0	0	0	15	39	0	0	0	0
ENLARGE AND UPGRADE	109	1,802	83	1,703	0	0	0	0	26	99	0	0	0	0
NEW PROCESS	436	3,991	0	0	74	883	246	2,574	0	0	0	0	116	532
REPLACE	36	138	34	136	0	0	0	0	2	1	0	0	0	0
ABANDON	131	294	125	292	0	0	0	0	6	1	0		0	0
NO CHANGE	486	5,893	452	5,657	0	0	0	0	34	236	0	0	0	0
OTHER	1	15	1	15	0	0	0	0	0	0	0	0	0	0
TOTAL	1,346	13,182	882	8,754	74	883	246	2,574	108	436	0	0	116	532

42-23 BIOLOGICAL NITRIFICATION - SEPARATE STAGE

	PROCESS TOTAL		************** TYPE 1 ESTIMATE **************						************** TYPE 2 ESTIMATE **************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	28	1,313	17	523	0	0	0	0	11	793	0	0	0	0
UPGRADE	4	98	2	88	0	0	0	0	2	9	0	0	0	0
ENLARGE AND UPGRADE	8	4,933	8	4,933	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	466	7,865	0	0	63	683	213	6,219	0	0	0	0	190	962
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	10	59	10	59	0	0	0	0	0	0	0	0	0	0
NO CHANGE	145	3,719	140	3,618	0	0	0	0	5	100	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	661	17,989	177	9,220	63	683	213	6,219	18	903	0	0	190	962

42-24 BIOLOGICAL NITRIFICATION - BOD & NIT

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	61	907	22	489	0	0	0	0	39	417	0	0	0	0
UPGRADE	10	1,743	9	1,742	0	0	0	0	1	0	0	0	0	0
ENLARGE AND UPGRADE	25	1,113	20	1,081	0	0	0	0	5	32	0	0	0	0
NEW PROCESS	1,482	11,228	0	0	130	2,182	508	7,444	0	0	0	0	844	1,582
REPLACE	7	50	5	20	0	0	0	0	2	30	0	0	0	0
ABANDON	21	73	20	70	0	0	0	0	1	2	0	0	0	0
NO CHANGE	428	8,375	408	7,822	0	0	0	0	20	553	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	2,034	23,493	484	11,228	130	2,182	508	7,444	68	1,036	0	0	844	1,682

42-25 BIOLOGICAL DENITRIFICATION

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	5	181	1	56	0	0	0	0	4	124	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	1	6	0	0	0	0	0	0	1	6	0	0	0	0
NEW PROCESS	58	634	0	0	8	40	19	260	0	0	0	0	31	332
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	2	15	2	15	0	0	0	0	0	0	0	0	0	0
NO CHANGE	31	1,213	26	999	0	0	0	0	5	213	0	0	0	0
OTHER	2	1,177	1	7	0	0	1	1,169	0	0	0	0	0	0
TOTAL	99	3,228	30	1,079	8	40	20	1,430	10	344	0	0	31	332

42-26 POST AERATION (REAERATION)

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	94	2,778	56	2,009	0	0	0	0	38	769	0	0	0	0
UPGRADE	16	75	14	71	0	0	0	0	2	4	0	0	0	0
ENLARGE AND UPGRADE	35	386	27	358	0	0	0	0	8	28	0	0	0	0
NEW PROCESS	1,137	9,457	0	0	183	1,974	528	6,689	0	0	2	1	424	793
REPLACE	8	11	8	11	0	0	0	0	0	0	0	0	0	0
ABANDON	61	289	60	288	0	0	0	0	1	0	0	0	0	0
NO CHANGE	712	11,297	635	10,522	0	0	0	0	77	775	0	0	0	0
OTHER	1	7	1	7	0	0	0	0	0	0	0	0	0	0
TOTAL	2,064	24,304	801	13,269	183	1,974	528	6,689	126	1,577	2	1	424	793

42-27 MICROSTRAINERS - PRIMARY

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	4	229	4	229	0	0	0	0	0	0	0	0	0	0
UPGRADE	1	77	0	0	0	0	0	0	1	77	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	26	174	0	0	11	67	15	106	0	0	0	0	0	0
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	7	25	7	25	0	0	0	0	0	0	0	0	0	0
NO CHANGE	21	1,177	18	1,173	0	0	0	0	3	3	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	59	1,684	29	1,428	11	67	15	106	4	80	0	0	0	0

42-28 MICROSTRAINERS - SECONDARY

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	14	197	7	143	0	0	0	0	7	54	0	0	0	0
UPGRADE	3	50	1	34	0	0	0	0	2	16	0	0	0	0
ENLARGE AND UPGRADE	2	4	2	4	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	58	988	0	0	17	185	28	535	0	0	0	0	13	267
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	7	1,288	7	1,288	0	0	0	0	0	0	0	0	0	0
NO CHANGE	59	955	56	882	0	0	0	0	3	73	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	143	3,483	73	2,351	17	185	28	535	12	143	0	0	13	267

42-29 SAND FILTERS

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	126	1,718	59	999	0	0	0	0	67	719	0	0	0	0
UPGRADE	29	246	22	226	0	0	0	0	7	20	0	0	0	0
ENLARGE AND UPGRADE	33	476	23	442	0	0	0	0	10	34	0	0	0	0
NEW PROCESS	3,189	14,622	0	0	230	3,668	834	7,828	0	0	0	0	2,125	3,129
REPLACE	11	52	9	48	0	0	0	0	2	4	0	0	0	0
ABANDON	145	317	132	297	0	0	0	0	13	20	0	0	0	0
NO CHANGE	1,101	8,898	906	8,240	0	0	0	0	195	658	0	0	0	0
OTHER	1	2	1	2	0	0	0	0	0	0	0	0	0	0
TOTAL	4,635	26,334	1,152	10,256	230	3,668	834	7,828	294	1,456	0	0	2,125	3,129

42-30 MIX-MEDIA FILTERS (SAND AND COAL)

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	37	1,650	20	1,307	0	0	0	0	17	343	0	0	0	0
UPGRADE	3	104	3	104	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	6	638	5	494	0	0	0	0	1	136	0	0	0	0
NEW PROCESS	229	7,584	0	0	52	1,078	145	6,037	0	0	0	0	32	468
REPLACE	1	0	1	0	0	0	0	0	0	0	0	0	0	0
ABANDON	14	85	14	85	0	0	0	0	0	0	0	0	0	0
NO CHANGE	201	7,395	194	7,288	0	0	0	0	7	107	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	491	17,451	237	9,289	52	1,078	145	6,037	25	587	0	0	32	468

42-31 OTHER FILTRATIONS

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	5	571	2	10	0	0	0	0	3	560	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	1	3	0	0	0	0	0	0	1	3	0	0	0	0
NEW PROCESS	33	1,182	0	0	7	221	21	872	0	0	1	59	4	29
REPLACE	1	0	1	0	0	0	0	0	0	0	0	0	0	0
ABANDON	5	16	3	15	0	0	0	0	2	1	0	0	0	0
NO CHANGE	29	249	25	163	0	0	0	0	4	85	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	74	2,022	31	189	7	221	21	872	10	650	1	59	4	29

42-32 ACTIVATED CARBON - GRANULAR

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	1	0	0	0	0	0	0	0	1	0	0	0	0	0
UPGRADE	1	57	1	57	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	1	28	1	28	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	21	1,830	0	0	6	328	11	1,487	0	0	0	0	4	14
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	4	153	3	153	0	0	0	0	1	0	0	0	0	0
NO CHANGE	20	1,205	19	1,070	0	0	0	0	1	136	0	0	0	0
OTHEP	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	45	3,278	24	1,310	6	328	11	1,487	3	136	0	0	4	14

42-33 ACTIVATED CARBON - POWDERED

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	6	330	0	0	4	293	2	37	0	0	0	0	0	0
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO CHANGE	3	297	3	297	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	9	627	3	297	4	293	2	37	0	0	0	0	0	0

42-34 TWO STAGE LIME TREATMENT OF RAW WASTEWATER

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	2	38	1	37	0	0	0	0	1	0	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	10	259	0	0	1	6	5	239	0	0	0	0	4	12
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	4	128	4	128	0	0	0	0	0	0	0	0	0	0
NO CHANGE	8	326	8	326	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	24	752	13	493	1	6	5	239	1	0	0	0	4	12

42-35 TWO STAGE TERTIARY LIME TREATMENT

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	5	74	2	45	0	0	0	0	3	29	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	16	504	0	0	4	142	8	341	0	0	0	0	4	20
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	1	0	0	0	0	0	0	0	1	0	0	0	0	0
NO CHANGE	14	567	14	567	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	36	1,146	16	612	4	142	8	341	4	29	0	0	4	20

42-36 SINGLE STAGE LIME TREATMENT OF RAW WASTEWATER

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	2	2	1	1	0	0	0	0	1	1	0	0	0	0
UPGRADE	1	113	1	113	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	14	595	0	0	5	174	7	249	0	0	0	0	2	171
REPLACE	1	20	1	20	0	0	0	0	0	0	0	0	0	0
ABANDON	5	33	5	33	0	0	0	0	0	0	0	0	0	0
NO CHANGE	20	354	20	354	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	43	1,120	28	523	5	174	7	249	1	1	0	0	2	171

42-37 SINGLE STAGE TERTIARY LIME TREATMENT

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	9	416	5	208	0	0	0	0	4	208	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	1	15	1	15	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	65	2,517	0	0	12	1,538	35	662	0	0	0	0	18	316
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	2	17	2	17	0	0	0	0	0	0	0	0	0	0
NO CHANGE	54	1,281	50	1,200	0	0	0	0	4	81	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	131	4,248	58	1,441	12	1,538	35	662	8	289	0	0	18	316

42-38 RECARBONATION

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	5	82	2	52	0	0	0	0	3	29	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	40	1,495	0	0	7	412	19	747	0	0	0	0	14	336
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	7	145	6	145	0	0	0	0	1	0	0	0	0	0
NO CHANGE	40	1,138	38	1,054	0	0	0	0	2	84	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	92	2,863	46	1,252	7	412	19	747	6	114	0	0	14	336

42-39 NEUTRALIZATION

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	1	22	1	22	0	0	0	0	0	0	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	1	3	0	0	0	0	0	0	1	3	0	0	0	0
NEW PROCESS	15	194	0	0	0	0	12	179	0	0	0	0	3	13
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	2	3	1	2	0	0	0	0	1	0	0	0	0	0
NO CHANGE	14	190	14	190	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	33	413	16	215	0	0	12	179	2	4	0	0	3	15

42-40 ALUM ADDITION TO PRIMARY

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	9	342	7	74	0	0	0	0	2	268	0	0	0	0
UPGRADE	1	10	0	0	0	0	0	0	1	10	0	0	0	0
ENLARGE AND UPGRADE	2	35	2	35	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	38	836	0	0	3	22	27	676	0	0	0	0	8	136
REPLACE	1	5	1	5	0	0	0	0	0	0	0	0	0	0
ABANDON	13	179	12	170	0	0	0	0	1	9	0	0	0	0
NO CHANGE	51	1,713	49	1,685	0	0	0	0	2	28	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	115	3,122	71	1,970	3	22	27	676	6	315	0	0	8	136

42-41 ALUM ADDITION TO SECONDARY

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	48	1,635	25	812	0	0	0	0	23	822	0	0	0	0
UPGRADE	15	289	11	276	0	0	0	0	4	13	0	0	0	0
ENLARGE AND UPGRADE	19	766	14	708	0	0	0	0	5	57	0	0	0	0
NEW PROCESS	511	5,966	0	0	61	1,142	230	3,782	0	0	0	0	220	1,041
REPLACE	3	27	3	27	0	0	0	0	0	0	0	0	0	0
ABANDON	23	150	23	150	0	0	0	0	0	0	0	0	0	0
NO CHANGE	314	6,162	289	5,727	0	0	0	0	25	434	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	933	14,990	365	7,703	61	1,142	230	3,782	57	1,328	0	0	220	1,041

42-42 ALUM ADDITION TO SEPARATE STAGE TERTIARY

	PROCESS TOTAL		************** TYPE 1 ESTIMATE **************						************** TYPE 2 ESTIMATE **************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	10	381	5	266	0	0	0	0	5	114	0	0	0	0
UPGRADE	2	11	2	11	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	61	997	0	0	10	127	30	658	0	0	1	0	20	210
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	2	19	1	0	0	0	0	0	1	18	0	0	0	0
NO CHANGE	66	1,529	62	1,464	0	0	0	0	4	65	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	141	2,940	70	1,743	10	127	30	658	10	198	1	0	20	210

42-43 FERRI-CHLORIDE ADDITION TO PRIMARY

	PROCESS TOTAL		************** TYPE 1 ESTIMATE **************						************** TYPE 2 ESTIMATE **************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	5	517	2	499	0	0	0	0	3	17	0	0	0	0
UPGRADE	2	389	2	389	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	1	3,179	1	3,179	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	12	254	0	0	3	27	6	194	0	0	0	0	3	31
REPLACE	1	3	1	3	0	0	0	0	0	0	0	0	0	0
ABANDON	9	258	8	249	0	0	0	0	1	9	0		0	0
NO CHANGE	34	1,401	33	1,159	0	0	0	0	1	242	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	64	6,003	47	5,480	3	27	6	194	5	269	0	0	3	31

42-44 FERRI-CHLORIDE ADDITION TO SECONDARY

	PROCESS TOTAL		************** TYPE 1 ESTIMATE **************						************** TYPE 2 ESTIMATE **************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	9	742	5	598	0	0	0	0	4	144	0	0	0	0
UPGRADE	6	493	6	493	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	5	140	5	140	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	76	637	0	0	14	76	45	504	0	0	0	0	17	56
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	10	119	8	115	0	0	0	0	2	3	0	0	0	0
NO CHANGE	146	4,393	142	4,387	0	0	0	0	4	6	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	252	6,527	166	5,735	14	76	45	504	10	154	0	0	17	56

42-45 FERRI-CHLORIDE ADDITION TO SEPARATE STAGE TERTIARY

	PROCESS TOTAL		************** TYPE 1 ESTIMATE **************						************** TYPE 2 ESTIMATE **************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	3	40	2	39	0	0	0	0	1	0	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	2	30	2	30	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	15	1,585	0	0	3	1,193	6	348	0	0	0	0	6	42
REPLACE	1	5	1	5	0	0	0	0	0	0	0	0	0	0
ABANDON	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO CHANGE	27	180	23	153	0	0	0	0	4	27	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	48	1,842	28	228	3	1,193	6	348	5	28	0	0	6	42

42-46 OTHER CHEMICAL ADDITIONS

	PROCESS TOTAL		************** TYPE 1 ESTIMATE **************						************** TYPE 2 ESTIMATE **************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	8	255	4	92	0	0	0	0	4	162	0	0	0	0
UPGRADE	2	456	1	454	0	0	0	0	1	2	0	0	0	0
ENLARGE AND UPGRADE	4	48	2	30	0	0	0	0	2	18	0	0	0	0
NEW PROCESS	38	3,236	0	0	13	2,583	23	645	0	0	0	0	2	7
REPLACE	1	700	1	700	0	0	0	0	0	0	0	0	0	0
ABANDON	12	66	11	63	0	0	0	0	1	3	0	0	0	0
NO CHANGE	64	2,253	60	1,674	0	0	0	0	4	579	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	129	7,017	79	3,015	13	2,583	23	645	12	765	0	0	2	7

42-47 ION EXCHANGE

	PROCESS TOTAL		************** TYPE 1 ESTIMATE **************						************** TYPE 2 ESTIMATE **************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	2	56	0	0	0	0	0	0	2	56	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	3	40	0	0	0	0	1	35	0	0	0	0	2	4
REPLACE	0	0	0	3	0	0	0	0	0	0	0	0	0	0
ABANDON	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO CHANGE	1	56	1	56	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	6	153	1	56	0	0	1	35	2	56	0	0	2	4

42-48 BREAKPOINT CHLORINATION

			************* TYPE 1 ESTIMATE				*************		************* TYPE 2 ESTIMATE				*************	
	PROCESS TOTAL		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	1	85	0	0	0	0	0	0	1	85	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	1	45	1	45	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	13	676	0	0	2	116	8	553	0	0	0	0	3	6
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO CHANGE	8	777	8	777	0	0	0	0	0	0	0	0	0	0
OTHER	1	1,169	0	0	0	0	1	1,169	0	0	0	0	0	0
TOTAL	24	2,754	9	823	2	116	9	1,723	1	85	0	0	3	6

42-49 AMONIA STRIPPING

			************* TYPE 1 ESTIMATE				*************		************* TYPE 2 ESTIMATE				*************	
	PROCESS TOTAL		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	2	2	0	0	0	0	1	0	0	0	0	0	1	1
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO CHANGE	7	395	6	338	0	0	0	0	1	56	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	9	398	6	338	0	0	1	0	1	56	0	0	1	1

42-50 DECHLORINATION

			************* TYPE 1 ESTIMATE				*************		************* TYPE 2 ESTIMATE				*************	
	PROCESS TOTAL		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	31	634	12	246	0	0	0	0	19	387	0	0	0	0
UPGRADE	2	18	2	18	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	2	26	2	26	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	234	3,916	0	0	41	443	106	2,941	0	0	1	68	86	462
REPLACE	2	6	2	6	0	0	0	0	0	0	0	0	0	0
ABANDON	7	286	7	286	0	0	0	0	0	0	0	0	0	0
NO CHANGE	160	2,428	142	2,340	0	0	0	0	18	87	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	438	7,316	167	2,924	41	443	106	2,941	37	475	1	68	86	462

42-51 CHLORINATION FOR DISINFECTION

			************* TYPE 1 ESTIMATE				*************		************* TYPE 2 ESTIMATE				*************	
	PROCESS TOTAL		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	1,353	14,962	656	10,383	0	0	0	0	697	4,579	0	0	0	0
UPGRADE	365	6,182	253	5,800	0	0	0	0	112	382	0	0	0	0
ENLARGE AND UPGRADE	523	11,474	409	9,202	0	0	0	0	114	2,271	0	0	0	0
NEW PROCESS	7,226	22,248	0	0	485	2,413	1,598	16,046	0	0	2	1	5,141	3,815
REPLACE	308	3,958	253	3,860	0	0	0	0	55	97	0	0	0	0
ABANDON	884	4,215	861	4,165	0	0	0	0	23	49	0	0	0	0
NO CHANGE	5,060	51,349	4,513	45,484	0	0	0	0	547	5,885	0	0	0	0
OTHER	5	86	4	86	0	0	0	0	1	0	0	0	0	0
TOTAL	15,724	114,517	6,949	78,983	485	2,413	1,598	16,046	1,549	13,266	2	1	5,141	3,815

42-52 OZONATION FOR DISINFECTION

			************* TYPE 1 ESTIMATE				*************		************* TYPE 2 ESTIMATE				*************	
	PROCESS TOTAL		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	3	15	2	8	0	0	0	0	1	7	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	26	1,058	0	0	8	199	13	525	0	0	2	333	3	1
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO CHANGE	27	1,693	26	1,674	0	0	0	0	1	18	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	56	2,768	28	1,682	8	199	3	525	2	26	2	333	3	1

42-53 OTHER DISINFECTION

			************* TYPE 1 ESTIMATE				*************		************* TYPE 2 ESTIMATE				*************	
	PROCESS TOTAL		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	48	363	0	0	19	57	27	305	0	0	0	0	2	0
REPLACE	1	0	1	0	0	0	0	0	0	0	0	0	0	0
ABANDON	1	2	1	2	0	0	0	0	0	0	0	0	0	0
NO CHANGE	7	4,698	6	4,640	0	0	0	0	1	58	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	57	5,065	8	4,643	19	57	27	305	1	58	0	0	2	0

42-54 LAND TREATMENT OF PRIMARY EFFLUENT

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	4	2	1	1	0	0	0	0	3	1	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	2	2	1	2	0	0	0	0	1	0	0	0	0	0
NEW PROCESS	53	48	0	0	14	12	32	34	0	0	0	0	7	1
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	56	65	25	48	0	0	0	0	31	16	0	0	0	0
NO CHANGE	14	20	11	11	0	0	0	0	3	8	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	129	139	38	63	14	12	32	34	38	27	0	0	7	1

42-55 LAND TREATMENT OF SECONDARY EFFLUENT (30/30)

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	60	443	29	192	0	0	0	0	31	251	0	0	0	0
UPGRADE	9	39	7	38	0	0	0	0	2	1	0	0	0	0
ENLARGE AND UPGRADE	13	303	8	91	0	0	0	0	5	211	0	0	0	0
NEW PROCESS	572	3,271	0	0	84	395	313	2,280	0	0	0	0	175	595
REPLACE	4	6	3	4	0	0	0	0	1	1	0	0	0	0
ABANDON	28	244	27	243	0	0	0	0	1	0	0	0	0	0
NO CHANGE	462	2,271	385	1,818	0	0	0	0	77	453	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1,148	6,598	459	2,408	84	395	313	2,280	117	918	0	0	175	595

42-56 LAND TREATMENT OF INTERIMEDIATE EFFLUENT

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	14	50	2	11	0	0	0	0	12	38	0	0	0	0
UPGRADE	3	9	2	8	0	0	0	0	1	0	0	0	0	0
ENLARGE AND UPGRADE	2	15	1	0	0	0	0	0	1	15	0	0	0	0
NEW PROCESS	115	202	0	0	24	41	43	122	0	0	0	0	48	38
REPLACE	3	0	3	0	0	0	0	0	0	0	0	0	0	0
ABANDON	26	23	13	14	0	0	0	0	13	8	0	0	0	0
NO CHANGE	132	259	90	202	0	0	0	0	42	56	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	295	560	111	238	24	41	43	122	69	119	0	0	48	38

42-57 STABILIZATION PONDS

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	780	2,363	261	1,654	0	0	0	0	519	709	0	0	0	0
UPGRADE	538	600	282	358	0	0	0	0	256	242	0	0	0	0
ENLARGE AND UPGRADE	388	607	256	501	0	0	0	0	132	106	0	0	0	0
NEW PROCESS	3,349	3,531	0	0	181	264	692	2,389	0	0	0	0	2,476	877
REPLACE	238	191	129	133	0	0	0	0	109	57	0	0	0	0
ABANDON	935	1,432	762	1,240	0	0	0	0	173	191	0	0	0	0
NO CHANGE	2,482	6,878	2,138	6,061	0	0	0	0	344	818	0	0	0	0
OTHER	20	82	17	81	0	0	0	0	3	1	0	0	0	0
TOTAL	8,730	15,688	3,845	10,030	181	264	692	2,389	1,536	2,127	0	0	2,476	877

42-58 AERATED LAGOONS

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	150	488	49	196	0	0	0	0	101	292	0	0	0	0
UPGRADE	91	548	50	256	0	0	0	0	41	291	0	0	0	0
ENLARGE AND UPGRADE	66	485	49	302	0	0	0	0	17	183	0	0	0	0
NEW PROCESS	1,772	1,854	0	0	160	385	545	1,108	0	0	0	0	1,067	360
REPLACE	40	65	17	44	0	0	0	0	23	20	0	0	0	0
ABANDON	140	436	119	344	0	0	0	0	21	91	0	0	0	0
NO CHANGE	775	3,098	718	2,913	0	0	0	0	57	184	0	0	0	0
OTHER	6	27	6	27	0	0	0	0	0	0	0	0	0	0
TOTAL	3,040	7,005	1,008	4,086	160	385	545	1,108	260	1,064	0	0	1,067	360

42-59 OUTFALL PUMPING

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	44	2,570	32	987	0	0	0	0	12	1,582	0	0	0	0
UPGRADE	7	740	7	740	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	7	738	7	738	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	192	5,655	0	0	45	2,377	133	3,177	0	0	2	46	12	54
REPLACE	5	2,718	3	1,117	0	0	0	0	2	1,601	0	0	0	0
ABANDON	38	469	38	469	0	0	0	0	0	0	0	0	0	0
NO CHANGE	126	5,847	113	3,031	0	0	0	0	13	2,815	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	419	18,740	200	7,085	45	2,377	133	3,177	27	5,999	2	46	12	54

42-60 OUTFALL DIFFUSER

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	11	1,294	5	679	0	0	0	0	6	615	0	0	0	0
UPGRADE	3	19	2	11	0	0	0	0	1	7	0	0	0	0
ENLARGE AND UPGRADE	2	69	1	68	0	0	0	0	1	1	0	0	0	0
NEW PROCESS	45	3,729	0	0	7	156	30	3,571	0	0	1	0	7	1
REPLACE	3	811	3	811	0	0	0	0	0	0	0	0	0	0
ABANDON	2	329	2	329	0	0	0	0	0	0	0	0	0	0
NO CHANGE	61	3,234	54	1,313	0	0	0	0	7	1,920	0	0	0	0
OTHER	1	5	0	0	0	0	0	0	1	5	0	0	0	0
TOTAL	128	9,494	67	3,214	7	156	30	3,571	16	2,550	1	0	7	1

42-61 EFFLUENT TO OTHER PLANTS

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	2	17	0	0	0	0	0	0	2	17	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	21	654	0	0	4	62	17	591	0	0	0	0	0	0
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	6	9	6	9	0	0	0	0	0	0	0	0	0	0
NO CHANGE	24	914	21	811	0	0	0	0	3	102	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	53	1,395	27	821	4	62	17	591	5	119	0	0	0	0

42-62 EFFLUENT OUTFALL

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	1,131	15,908	661	11,721	0	0	0	0	470	4,187	0	0	0	0
UPGRADE	343	3,178	205	3,009	0	0	0	0	138	169	0	0	0	0
ENLARGE AND UPGRADE	397	5,545	291	5,368	0	0	0	0	106	185	0	0	0	0
NEW PROCESS	6,145	14,131	0	0	333	3,065	1,100	7,485	0	0	3	1	4,709	3,586
REPLACE	548	4,357	414	3,932	0	0	0	0	134	424	0	0	0	0
ABANDON	1,775	7,086	1,712	6,345	0	0	0	0	63	741	0	0	0	0
NO CHANGE	9,515	91,780	7,385	81,887	0	0	0	0	2,130	9,923	0	0	0	0
OTHER	27	131	7	121	0	0	0	0	20	9	0	0	0	0
TOTAL	19,881	142,119	10,675	112,378	333	3,065	1,100	7,485	3,061	15,641	3	1	4,709	3,586

42-63 OTHER TREATMENT

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	16	189	5	169	0	0	0	0	11	20	0	0	0	0
UPGRADE	8	1,066	7	1,063	0	0	0	0	1	2	0	0	0	0
ENLARGE AND UPGRADE	7	26	5	23	0	0	0	0	2	3	0	0	0	0
NEW PROCESS	143	2,413	0	0	33	489	98	1,908	0	0	0	0	12	14
REPLACE	18	29	12	8	0	0	0	0	6	21	0	0	0	0
ABANDON	257	114	95	97	0	0	0	0	162	17	0	0	0	0
NO CHANGE	137	3,842	123	3,671	0	0	0	0	14	171	0	0	0	0
OTHER	1	2	1	2	0	0	0	0	0	0	0	0	0	0
TOTAL	587	7,685	248	5,035	33	489	98	1,908	196	236	0	0	12	14

42-64 RECALCINATION

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	5	475	2	232	0	0	0	0	3	242	0	0	0	0
UPGRADE	1	22	1	22	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	12	250	0	0	2	45	6	197	0	0	0	0	4	7
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	3	76	3	76	0	0	0	0	0	0	0		0	0
NO CHANGE	17	1,379	17	1,379	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	38	2,204	23	1,711	2	45	6	197	3	242	0	0	4	7

42-65 AEROBIC DIGESTION - AIR

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	537	3,376	215	2,272	0	0	0	0	322	1,103	0	0	0	0
UPGRADE	123	1,022	70	877	0	0	0	0	53	145	0	0	0	0
ENLARGE AND UPGRADE	168	953	109	859	0	0	0	0	59	93	0	0	0	0
NEW PROCESS	2,110	8,739	0	0	234	2,966	610	4,272	0	0	1	0	1,265	1,502
REPLACE	58	179	44	139	0	0	0	0	14	40	0	0	0	0
ABANDON	372	1,199	354	1,165	0	0	0	0	18	33	0	0	0	0
NO CHANGE	2,090	12,133	1,902	11,690	0	0	0	0	188	443	0	0	0	0
OTHER	3	4	3	4	0	0	0	0	0	0	0	0	0	0
TOTAL	5,461	27,689	2,697	17,011	234	2,966	610	4,272	684	1,859	1	0	1,265	1,502

42-66 AEROBIC DIGESTION - OXYGEN

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	7	31	4	27	0	0	0	0	3	4	0	0	0	0
UPGRADE	1	0	1	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	1	5	1	5	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	19	426	0	0	7	66	11	358	0	0	0	0	0	0
REPLACE	1	0	0	0	0	0	0	0	0	0	0	0	1	1
ABANDON	8	41	8	41	0	0	0	0	1	0	0	0	0	0
NO CHANGE	33	430	30	398	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	3	31	0	0	0	0
									0	0	0	0	0	0
TOTAL	70	935	44	473	7	66	11	358	7	36	0	0	1	1

42-67 COMPOSTING

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	2	75	2	75	0	0	0	0	0	0	0	0	0	0
UPGRADE	2	1,181	2	1,181	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	2	662	2	662	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	38	1,798	0	0	10	192	23	882	0	0	0	0	5	722
REPLACE	1	18	1	18	0	0	0	0	0	0	0	0	0	0
ABANDON	2	2	2	2	0	0	0	0	0	0	0	0	0	0
NO CHANGE	19	2,033	13	427	0	0	0	0	6	1,606	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	66	5,773	22	2,369	10	192	23	882	6	1,606	0	0	5	722

42-68 ANAEROBIC DIGESTION

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	577	19,568	354	13,880	0	0	0	0	223	5,687	0	0	0	0
UPGRADE	277	7,354	213	5,349	0	0	0	0	64	2,005	0	0	0	0
ENLARGE AND UPGRADE	332	7,612	275	7,132	0	0	0	0	57	480	0	0	0	0
NEW PROCESS	1,093	9,589	0	0	90	1,826	291	6,438	0	0	1	0	711	1,325
REPLACE	128	1,132	111	1,069	0	0	0	0	17	63	0	0	0	0
ABANDON	850	11,047	802	10,939	0	0	0	0	48	108	0	0	0	0
NO CHANGE	2,020	38,142	1,763	35,050	0	0	0	0	257	3,092	0	0	0	0
OTHER	10	616	9	616	0	0	0	0	1	0	0	0	0	0
TOTAL	5,287	95,065	3,527	74,038	90	1,826	291	6,438	667	11,438	1	0	711	1,325

42-69 SLUDGE LAGOONS

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	71	1,943	37	1,476	0	0	0	0	34	467	0	0	0	0
UPGRADE	30	748	23	198	0	0	0	0	7	549	0	0	0	0
ENLARGE AND UPGRADE	39	1,655	32	1,651	0	0	0	0	7	3	0	0	0	0
NEW PROCESS	156	2,567	0	0	26	386	114	2,158	0	0	0	0	16	22
REPLACE	12	170	11	168	0	0	0	0	1	2	0	0	0	0
ABANDON	105	1,944	93	1,889	0	0	0	0	12	54	0	0	0	0
NO CHANGE	353	9,770	312	9,569	0	0	0	0	41	200	0	0	0	0
OTHER	2	465	2	465	0	0	0	0	0	0	0	0	0	0
TOTAL	768	19,265	510	15,418	26	386	114	2,158	102	1,279	0	0	16	22

42-70 HEAT TREATMENT

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	25	901	16	774	0	0	0	0	9	127	0	0	0	0
UPGRADE	5	246	4	220	0	0	0	0	1	25	0	0	0	0
ENLARGE AND UPGRADE	5	548	4	547	0	0	0	0	1	0	0	0	0	0
NEW PROCESS	39	5,810	0	0	10	2,611	15	2,973	0	0	0	0	14	225
REPLACE	2	21	2	21	0	0	0	0	0	0	0	0	0	0
ABANDON	19	1,332	17	1,330	0	0	0	0	2	1	0	0	0	0
NO CHANGE	108	10,919	98	10,510	0	0	0	0	10	409	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	203	19,779	141	13,403	10	2,611	15	2,973	23	565	0	0	14	225

42-71 CHLORINE OXIDATION OF SLUDGE (PURIFAX)

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	3	498	1	13	0	0	0	0	2	484	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	13	167	0	0	5	87	6	79	0	0	0	0	2	0
REPLACE	2	10	2	10	0	0	0	0	0	0	0	0	0	0
ABANDON	6	430	5	426	0	0	0	0	1	3	0	0	0	0
NO CHANGE	29	383	27	308	0	0	0	0	2	75	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	53	1,489	35	955	5	87	6	79	5	564	0	0	2	0

42-72 LIME STABILIZATION

	PROCESS TOTAL		TYPE 1 ESTIMATE NOW IN USE		TYPE 1 ESTIMATE UNDER CONSTRUCTION		TYPE 1 ESTIMATE REQUIRED BUT NOT FUNDED		TYPE 2 ESTIMATE NOW IN USE		TYPE 2 ESTIMATE UNDER CONSTRUCTION		TYPE 2 ESTIMATE REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	7	542	3	30	0	0	0	0	4	511	0	0	0	0
UPGRADE	2	77	1	68	0	0	0	0	1	9	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	40	857	0	0	9	240	26	591	0	0	0	0	5	25
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	7	359	7	359	0	0	0	0	0	0	0	0	0	0
NO CHANGE	58	2,723	51	2,640	0	0	0	0	7	83	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	114	4,560	62	3,098	9	240	26	591	12	604	0	0	5	25

42-73 WET AIR OXIDATION

	PROCESS TOTAL		TYPE 1 ESTIMATE NOW IN USE		TYPE 1 ESTIMATE UNDER CONSTRUCTION		TYPE 1 ESTIMATE REQUIRED BUT NOT FUNDED		TYPE 2 ESTIMATE NOW IN USE		TYPE 2 ESTIMATE UNDER CONSTRUCTION		TYPE 2 ESTIMATE REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	8	597	7	483	0	0	0	0	1	113	0	0	0	0
UPGRADE	2	488	1	397	0	0	0	0	1	90	0	0	0	0
ENLARGE AND UPGRADE	2	147	2	147	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	4	335	0	0	1	37	3	297	0	0	0	0	0	0
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	6	248	6	248	0	0	0	0	0	0	0	0	0	0
NO CHANGE	33	1,758	31	1,693	0	0	0	0	2	64	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	55	3,575	47	2,971	1	37	3	297	4	268	0	0	0	0

42-74 AIR DRYING

	PROCESS TOTAL		TYPE 1 ESTIMATE NOW IN USE		TYPE 1 ESTIMATE UNDER CONSTRUCTION		TYPE 1 ESTIMATE REQUIRED BUT NOT FUNDED		TYPE 2 ESTIMATE NOW IN USE		TYPE 2 ESTIMATE UNDER CONSTRUCTION		TYPE 2 ESTIMATE REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	1,137	9,930	582	6,974	0	0	0	0	555	2,957	0	0	0	0
UPGRADE	201	3,010	125	1,193	0	0	0	0	76	1,817	0	0	0	0
ENLARGE AND UPGRADE	389	3,420	300	3,257	0	0	0	0	89	162	0	0	0	0
NEW PROCESS	2,857	7,492	0	0	214	1,145	680	3,825	0	0	3	5	1,960	2,519
REPLACE	217	1,060	146	891	0	0	0	0	71	169	0	0	0	0
ABANDON	1,080	4,626	1,015	4,534	0	0	0	0	65	91	0	0	0	0
NO CHANGE	3,704	29,318	3,208	27,342	0	0	0	0	496	1,977	0	0	0	0
OTHER	4	63	4	63	0	0	0	0	0	0	0	0	0	0
TOTAL	9,589	58,923	5,380	44,256	214	1,145	680	3,825	1,352	7,175	3	5	1,960	2,519

42-75 DEWATERING - MECHANICAL - VACUUM FILTER

	PROCESS TOTAL		TYPE 1 ESTIMATE NOW IN USE		TYPE 1 ESTIMATE UNDER CONSTRUCTION		TYPE 1 ESTIMATE REQUIRED BUT NOT FUNDED		TYPE 2 ESTIMATE NOW IN USE		TYPE 2 ESTIMATE UNDER CONSTRUCTION		TYPE 2 ESTIMATE REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	185	8,237	114	6,361	0	0	0	0	71	1,875	0	0	0	0
UPGRADE	50	6,191	38	6,083	0	0	0	0	12	108	0	0	0	0
ENLARGE AND UPGRADE	67	4,662	51	4,458	0	0	0	0	16	204	0	0	0	0
NEW PROCESS	475	11,255	0	0	80	3,183	184	6,742	0	0	0	0	211	1,329
REPLACE	11	199	11	199	0	0	0	0	0	0	0	0	0	0
ABANDON	107	6,513	103	6,501	0	0	0	0	4	11	0	0	0	0
NO CHANGE	753	28,492	671	26,236	0	0	0	0	82	2,256	0	0	0	0
OTHER	1	12	1	12	0	0	0	0	0	0	0	0	0	0
TOTAL	1,649	65,565	989	49,853	80	3,183	184	6,742	185	4,456	0	0	211	1,329

42-76 DEWATERING - MECHANICAL - CENTRIFUGE

	PROCESS TOTAL		TYPE 1 ESTIMATE NOW IN USE		TYPE 1 ESTIMATE UNDER CONSTRUCTION		TYPE 1 ESTIMATE REQUIRED BUT NOT FUNDED		TYPE 2 ESTIMATE NOW IN USE		TYPE 2 ESTIMATE UNDER CONSTRUCTION		TYPE 2 ESTIMATE REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	47	4,381	25	1,261	0	0	0	0	22	3,120	0	0	0	0
UPGRADE	11	557	10	466	0	0	0	0	1	90	0	0	0	0
ENLARGE AND UPGRADE	13	896	11	724	0	0	0	0	2	171	0	0	0	0
NEW PROCESS	71	11,211	0	0	17	624	46	8,592	0	0	0	0	8	1,994
REPLACE	3	58	3	58	0	0	0	0	0	0	0	0	0	0
ABANDON	15	593	15	593	0	0	0	0	0	0	0	0	0	0
NO CHANGE	153	7,582	139	7,405	0	0	0	0	14	176	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	313	25,281	203	10,509	17	624	46	8,592	39	3,559	0	0	8	1,994

42-77 DEWATERING - MECHANICAL - FILTER PRESS

	PROCESS TOTAL		TYPE 1 ESTIMATE NOW IN USE		TYPE 1 ESTIMATE UNDER CONSTRUCTION		TYPE 1 ESTIMATE REQUIRED BUT NOT FUNDED		TYPE 2 ESTIMATE NOW IN USE		TYPE 2 ESTIMATE UNDER CONSTRUCTION		TYPE 2 ESTIMATE REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	27	883	17	483	0	0	0	0	10	399	0	0	0	0
UPGRADE	2	8	2	8	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	10	514	10	514	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	180	11,475	0	0	43	4,026	125	7,296	0	0	0	0	12	153
REPLACE	1	132	1	132	0	0	0	0	0	0	0	0	0	0
ABANDON	7	170	7	170	0	0	0	0	0	0	0	0	0	0
NO CHANGE	104	3,898	96	3,523	0	0	0	0	8	374	0	0	0	0
OTHER	1	97	1	97	0	0	0	0	0	0	0	0	0	0
TOTAL	332	17,181	134	4,930	43	4,026	125	7,296	18	774	0	0	12	153

42-78 DEWATERING - OTHERS

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	3	85	2	85	0	0	0	0	1	0	0	0	0	0
UPGRADE	4	57	4	57	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	1	1,260	1	1,260	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	36	1,580	0	0	3	15	25	1,470	0	0	0	0	8	94
REPLACE	2	8	2	8	0	0	0	0	0	0	0	0	0	0
ABANDON	7	24	5	8	0	0	0	0	2	16	0	0	0	0
NO CHANGE	20	419	19	409	0	0	0	0	1	10	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	73	3,437	33	1,829	3	15	25	1,470	4	27	0	0	8	94

42-79 GRAVITY THICKENING

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	140	10,230	85	9,164	0	0	0	0	55	1,066	0	0	0	0
UPGRADE	27	1,981	21	1,857	0	0	0	0	6	123	0	0	0	0
ENLARGE AND UPGRADE	35	2,780	28	2,629	0	0	0	0	7	150	0	0	0	0
NEW PROCESS	398	10,203	0	0	75	2,951	210	5,580	0	0	0	0	113	1,672
REPLACE	11	271	10	271	0	0	0	0	1	0	0	0	0	0
ABANDON	62	4,913	60	4,904	0	0	0	0	2	9	0	0	0	0
NO CHANGE	509	24,934	464	23,972	0	0	0	0	45	982	0	0	0	0
OTHER	1	75	1	75	0	0	0	0	0	0	0	0	0	0
TOTAL	1,183	55,411	669	42,875	75	2,951	210	5,580	116	2,332	0	0	113	1,672

42-80 AIR FLOTATION THICKENING

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	39	3,211	24	2,189	0	0	0	0	15	1,022	0	0	0	0
UPGRADE	8	839	7	833	0	0	0	0	1	25	0	0	0	0
ENLARGE AND UPGRADE	5	770	4	755	0	0	0	0	1	15	0	0	0	0
NEW PROCESS	149	11,803	0	0	40	2,597	101	7,962	0	0	0	0	8	1,243
REPLACE	3	148	3	148	0	0	0	0	0	0	0	0	0	0
ABANDON	6	1,413	6	1,413	0	0	0	0	0	0	0	0	0	0
NO CHANGE	160	9,203	144	8,343	0	0	0	0	16	860	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	370	27,410	188	13,603	40	2,597	101	7,962	33	1,923	0	0	8	1,243

42-81 INCINERATION - MULTIPLE HEARTH

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	42	4,028	27	3,129	0	0	0	0	15	899	0	0	0	0
UPGRADE	22	4,818	17	4,757	0	0	0	0	5	61	0	0	0	0
ENLARGE AND UPGRADE	18	3,093	14	2,933	0	0	0	0	4	159	0	0	0	0
NEW PROCESS	77	8,173	0	0	12	1,072	43	5,319	0	0	2	357	20	1,423
REPLACE	7	913	5	895	0	0	0	0	2	18	0	0	0	0
ABANDON	34	1,405	31	1,246	0	0	0	0	3	158	0	0	0	0
NO CHANGE	178	13,111	163	12,346	0	0	0	0	15	764	0	0	0	0
OTHER	1	1,169	0	0	0	0	1	1,169	0	0	0	0	0	0
TOTAL	379	36,714	257	25,308	12	1,072	44	6,489	44	2,062	2	357	20	1,423

42-82 INCINERATION - FLUIDIZED BEDS

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	1	17	1	17	0	0	0	0	0	0	0	0	0	0
UPGRADE	2	181	2	181	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	4	1,119	0	0	1	22	2	832	0	0	0	0	1	264
REPLACE	1	14	1	14	0	0	0	0	0	0	0	0	0	0
ABANDON	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO CHANGE	18	1,125	17	1,101	0	0	0	0	1	23	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	26	2,456	21	1,314	1	22	2	832	1	23	0	0	1	264

42-83 INCINERATION - ROTARY KILN

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	1	90	0	0	0	0	0	0	1	90	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	1	105	1	105	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	2	1,170	0	0	0	0	0	0	0	0	0	0	2	1,170
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	2	12	2	12	0	0	0	0	0	0	0	0	0	0
NO CHANGE	4	345	4	345	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	10	1,725	7	464	0	0	0	0	1	90	0	0	2	1,170

42-84 INCINERATION - OTHERS

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	1	104	1	104	0	0	0	0	0	0	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	4	598	0	0	3	314	1	283	0	0	0	0	0	0
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO CHANGE	14	997	13	972	0	0	0	0	1	24	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	19	1,700	14	1,077	3	314	1	283	1	24	0	0	0	0

42-85 PYROLYSIS

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	5	89	0	0	0	0	3	64	0	0	0	0	2	24
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	0	0	0	0	0	0	0	0	0	0	0		0	0
NO CHANGE	2	97	2	97	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	7	186	2	97	0	0	3	64	0	0	0	0	2	24

42-86 CO-INCINERATION WITH SOLID WASTE

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	8	483	0	0	4	392	4	91	0	0	0	0	0	0
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	1	1	1	1	0	0	0	0	0	0	0	0	0	0
NO CHANGE	6	238	6	238	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	15	724	7	240	4	392	4	91	0	0	0	0	0	0

42-87 CO-PYROLYSIS WITH SOLID WASTE

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	1	1	0	0	0	0	0	0	1	1	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	1	171	0	0	0	0	0	0	0	0	0	0	0	0
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	1	171
ABANDON	2	31	2	31	0	0	0	0	0	0	0	0	0	0
NO CHANGE	9	306	9	306	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	13	511	11	338	0	0	0	0	1	1	0	0	1	171

42-88 CO-INCINERATION - OTHERS

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	1	11	1	11	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	1	37	0	0	0	0	1	37	0	0	0	0	0	0
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO CHANGE	1	9	1	9	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	3	58	2	20	0	0	1	37	0	0	0	0	0	0

42-89 LAND FILL

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	672	10,964	366	8,101	0	0	0	0	306	2,063	0	0	0	0
UPGRADE	65	2,337	47	2,270	0	0	0	0	18	67	0	0	0	0
ENLARGE AND UPGRADE	129	8,965	95	7,357	0	0	0	0	34	1,608	0	0	0	0
NEW PROCESS	3,084	14,747	0	0	245	3,360	801	7,610	0	0	2	1	2,036	3,779
REPLACE	91	335	60	276	0	0	0	0	31	58	0	0	0	0
ABANDON	1,038	6,068	996	5,739	0	0	0	0	42	329	0	0	0	0
NO CHANGE	5,462	59,853	4,384	52,527	0	0	0	0	1,078	7,327	0	0	0	0
OTHER	1	700	1	700	0	0	0	0	0	0	0	0	0	0
TOTAL	10,542	103,973	5,949	76,973	245	3,360	801	7,610	1,509	12,253	2	1	2,036	3,779

42-90 LAND SPREADING OF LIQUID SLUDGE

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	55	358	26	241	0	0	0	0	29	116	0	0	0	0
UPGRADE	14	73	11	66	0	0	0	0	3	7	0	0	0	0
ENLARGE AND UPGRADE	29	4,815	23	4,798	0	0	0	0	6	16	0	0	0	0
NEW PROCESS	392	1,507	0	0	47	274	151	1,099	0	0	0	0	194	134
REPLACE	10	88	9	87	0	0	0	0	1	0	0	0	0	0
ABANDON	156	939	148	869	0	0	0	0	8	70	0	0	0	0
NO CHANGE	833	5,236	717	4,960	0	0	0	0	116	276	0	0	0	0
OTHER	1	18	1	18	0	0	0	0	0	0	0	0	0	0
TOTAL	1,490	13,037	935	11,042	47	274	151	1,099	163	487	0	0	194	134

42-91 LAND SPREADING OF THICKENED SLUDGE

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	94	1,529	69	838	0	0	0	0	25	698	0	0	0	0
UPGRADE	24	892	17	851	0	0	0	0	7	40	0	0	0	0
ENLARGE AND UPGRADE	61	6,379	54	6,371	0	0	0	0	7	7	0	0	0	0
NEW PROCESS	339	5,402	0	0	69	1,673	174	3,555	0	0	0	0	96	173
REPLACE	10	113	10	113	0	0	0	0	0	0	0	0	0	0
ABANDON	162	2,712	155	2,694	0	0	0	0	7	17	0	0	0	0
NO CHANGE	1,014	11,341	871	10,591	0	0	0	0	143	750	0	0	0	0
OTHER	4	480	3	471	0	0	0	0	1	9	0	0	0	0
TOTAL	1,708	28,853	1,179	21,925	69	1,673	174	3,555	190	1,525	0	0	96	173

42-92 TRENCHING

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	1	1	1	1	0	0	0	0	0	0	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	3	7	0	0	1	7	1	0	0	0	0	0	1	0
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	1	1,169	1	1,169	0	0	0	0	0	0	0	0	0	0
NO CHANGE	6	73	5	22	0	0	0	0	1	50	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	11	1,251	7	1,193	1	7	1	0	1	50	0	0	1	0

42-93 OCEAN DUMPING

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	3	126	0	0	0	0	0	0	3	126	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	8	147	0	0	0	0	3	92	0	0	0	0	5	54
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	40	11,059	32	9,166	0	0	0	0	8	1,893	0	0	0	0
NO CHANGE	6	71	4	28	0	0	0	0	2	42	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	57	11,405	36	9,195	0	0	3	92	13	2,062	0	0	5	54

42-94 OTHER SLUDGE HANDLING

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	21	461	10	305	0	0	0	0	11	156	0	0	0	0
UPGRADE	9	760	4	657	0	0	0	0	5	103	0	0	0	0
ENLARGE AND UPGRADE	5	3,595	4	3,593	0	0	0	0	1	1	0	0	0	0
NEW PROCESS	292	12,397	0	0	37	1,414	188	10,833	0	0	0	0	67	149
REPLACE	3	11	3	11	0	0	0	0	0	0	0	0	0	0
ABANDON	68	1,709	61	1,686	0	0	0	0	7	22	0	0	0	0
NO CHANGE	203	5,486	181	4,915	0	0	0	0	22	571	0	0	0	0
OTHER	2	1,476	1	18	0	0	0	0	1	1,457	0	0	0	0
TOTAL	603	25,899	264	11,188	37	1,414	188	10,833	47	2,313	0	0	67	149

42-95 DIGEST GAS UTILIZATION FACILITIES

	PROCESS TOTAL		************* TYPE 1 ESTIMATE *************						************* TYPE 2 ESTIMATE *************					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	24	3,261	14	955	0	0	0	0	10	2,305	0	0	0	0
UPGRADE	4	64	3	56	0	0	0	0	1	7	0	0	0	0
ENLARGE AND UPGRADE	24	2,752	23	1,294	0	0	0	0	1	1,457	0	0	0	0
NEW PROCESS	57	5,951	0	0	10	219	41	5,346	0	0	0	0	6	384
REPLACE	6	678	6	678	0	0	0	0	0	0	0	0	0	0
ABANDON	25	1,406	25	1,406	0	0	0	0	0	0	0	0	0	0
NO CHANGE	126	5,772	112	4,191	0	0	0	0	14	1,581	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	266	19,887	183	8,583	10	219	41	5,346	26	5,352	0	0	6	384

42-96 CONTROL/LAB.MAINTENANCE BUILDINGS

			TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
	PROCESS TOTAL		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	607	12,636	303	8,246	0	0	0	0	304	4,390	0	0	0	0
UPGRADE	436	8,592	304	6,145	0	0	0	0	132	446	0	0	0	0
ENLARGE AND UPGRADE	645	14,017	499	12,099	0	0	0	0	146	1,918	0	0	0	0
NEW PROCESS	5,863	13,679	0	0	375	2,193	1,255	8,213	0	0	2	1	4,231	3,277
REPLACE	218	1,980	172	1,925	0	0	0	0	46	55	0	0	0	0
ABANDON	632	3,491	616	3,438	0	0	0	0	16	53	0	0	0	0
NO CHANGE	5,919	67,143	4,855	59,670	0	0	0	0	1,064	7,278	0	0	0	0
OTHER	1	12	1	12	0	0	0	0	0	0	0	0	0	0
TOTAL	14,321	121,554	6,750	93,737	375	2,193	1,255	8,213	1,708	14,143	2	1	4,231	3,277

42-97 FULLY AUTOMATED USING DIGITAL CONTROL

			TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
	PROCESS TOTAL		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	9	1,716	6	1,076	0	0	0	0	3	639	0	0	0	0
UPGRADE	1	189	1	189	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	3	314	2	181	0	0	0	0	1	132	0	0	0	0
NEW PROCESS	24	3,493	0	0	7	2,662	9	798	0	0	0	0	8	33
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	1	0	1	0	0	0	0	0	0	0	0	0	0	0
NO CHANGE	28	3,942	25	2,326	0	0	0	0	3	1,616	0	0	0	0
OTHER	2	711	1	170	0	0	0	0	1	541	0	0	0	0
TOTAL	68	10,368	36	3,945	7	2,662	9	798	8	2,929	0	0	8	33

42-98 FULLY AUTOMATED USING ANALOG CONTROLS

			TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
	PROCESS TOTAL		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLAPGE	6	1,129	2	1,022	0	0	0	0	4	107	0	0	0	0
UPGRADE	8	680	7	680	0	0	0	0	1	0	0	0	0	0
ENLARGE AND UPGRADE	5	86	5	86	0	0	0	0	0	0	0	0	0	0
NEW PPOCESS	13	1,385	0	0	1	20	9	1,342	0	0	0	0	3	22
REPLACE	6	179	6	179	0	0	0	0	0	0	0	0	0	0
ABANDON	3	39	3	39	0	0	0	0	0	0	0	0	0	0
NO CHANGE	51	4,032	46	3,608	0	0	0	0	5	430	0	0	0	0
OTHER	1	181	1	181	0	0	0	0	0	0	0	0	0	0
TOTAL	93	7,720	70	5,796	1	20	9	1,342	10	537	0	0	3	22

42-99 SEMI AUTOMATED PLANT

			TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
	PROCESS TOTAL		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	853	7,991	333	5,409	0	0	0	0	520	2,582	0	0	0	0
UPGRADE	1,066	17,900	668	16,844	0	0	0	0	398	1,057	0	0	0	0
ENLARGE AND UPGRADE	1,026	15,424	717	14,467	0	0	0	0	309	958	0	0	0	0
NEW PROCESS	4,731	12,577	0	0	346	1,992	1,065	7,634	0	0	2	1	3,318	2,953
REPLACE	523	1,821	366	1,680	0	0	0	0	157	140	0	0	0	0
ABANDON	1,073	6,368	1,047	6,309	0	0	0	0	26	59	0	0	0	0
NO CHANGE	6,064	61,806	5,306	55,433	0	0	0	0	758	6,373	0	0	0	0
OTHER	24	748	19	655	0	0	0	0	5	93	0	0	0	0
TOTAL	15,360	124,640	8,456	100,800	346	1,992	1,065	7,634	2,173	11,265	2	1	3,318	2,953

42-A1 MANUALLY OPERTED AND CONTROLLED PLANT

			TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
	PROCESS TOTAL		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	295	1,276	93	841	0	0	0	0	202	435	0	0	0	0
UPGRADE	343	612	134	478	0	0	0	0	209	134	0	0	0	0
ENLARGE AND UPGRADE	307	655	211	555	0	0	0	0	96	100	0	0	0	0
NEW PROCESS	2,975	2,527	0	0	129	145	555	1,550	0	0	0	0	2,291	830
REPLACE	187	260	105	208	0	0	0	0	82	52	0	0	0	0
ABANDON	685	1,510	575	1,318	0	0	0	0	110	192	0	0	0	0
NO CHANGE	2,793	5,391	2,209	4,325	0	0	0	0	584	1,066	0	0	0	0
OTHER	12	103	11	103	0	0	0	0	1	0	0	0	0	0
TOTAL	7,597	12,338	3,338	7,830	129	145	555	1,550	1,284	1,981	0	0	2,291	830

42-A2 PACKAGE PLANT

			TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
	PROCESS TOTAL		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	136	103	34	42	0	0	0	0	102	61	0	0	0	0
UPGRADE	78	60	38	46	0	0	0	0	40	13	0	0	0	0
ENLARGE AND UPGRADE	105	147	57	111	0	0	0	0	48	35	0	0	0	0
NEW PROCESS	1,110	758	0	0	74	61	203	172	0	0	1	0	832	524
REPLACE	31	21	23	18	0	0	0	0	8	3	0	0	0	0
ABANDON	392	535	361	504	0	0	0	0	31	31	0	0	0	0
NO CHANGE	931	1,016	819	960	0	0	0	0	112	56	0	0	0	0
OTHER	1	0	1	0	0	0	0	0	0	0	0	0	0	0
TOTAL	2,784	2,645	1,333	1,683	74	61	203	172	341	203	1	0	832	524

42-A3 SEMI-PACKAGE PLANT

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	218	507	68	204	0	0	0	0	150	302	0	0	0	0
UPGRADE	131	382	72	222	0	0	0	0	59	160	0	0	0	0
ENLARGE AND UPGRADE	149	446	95	362	0	0	0	0	54	83	0	0	0	0
NEW PROCESS	939	1,484	0	0	69	118	205	891	0	0	3	2	662	472
REPLACE	80	212	41	92	0	0	0	0	39	119	0	0	0	0
ABANDON	215	717	203	698	0	0	0	0	12	26	0	0	0	0
NO CHANGE	1,086	3,918	948	3,554	0	0	0	0	138	364	0	0	0	0
OTHER	4	14	3	13	0	0	0	0	1	0	0	0	0	0
TOTAL	2,822	7,683	1,430	5,140	69	118	205	891	453	1,058	3	2	662	472

42-A4 CUSTOM BUILT PLANT

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	937	11,038	407	7,907	0	0	0	0	530	3,131	0	0	0	0
UPGRADE	1,264	16,194	689	15,040	0	0	0	0	575	1,155	0	0	0	0
ENLARGE AND UPGRADE	1,411	26,118	1,014	24,405	0	0	0	0	397	1,712	0	0	0	0
NEW PROCESS	5,475	13,433	0	0	318	1,870	1,195	8,806	0	0	0	0	3,962	2,763
REPLACE	613	1,987	426	1,845	0	0	0	0	187	142	0	0	0	0
ABANDON	1,092	4,480	1,018	4,373	0	0	0	0	74	107	0	0	0	0
NO CHANGE	6,453	64,202	5,551	55,668	0	0	0	0	902	8,533	0	0	0	0
OTHER	37	1,801	31	1,166	0	0	0	0	6	634	0	0	0	0
TOTAL	17,282	139,257	9,136	110,408	318	1,870	1,195	8,806	2,671	15,417	0	0	3,962	2,763

42-A5 IMHOFF TANKS

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	10	5	4	1	0	0	0	0	6	3	0	0	0	0
UPGRADE	26	21	22	20	0	0	0	0	4	0	0	0	0	0
ENLARGE AND UPGRADE	4	2	3	1	0	0	0	0	1	1	0	0	0	0
NEW PROCESS	10	6	0	0	4	1	6	5	0	0	0	0	0	0
REPLACE	7	3	5	2	0	0	0	0	2	1	0	0	0	0
ABANDON	263	255	137	119	0	0	0	0	126	135	0	0	0	0
NO CHANGE	110	115	67	83	0	0	0	0	43	32	0	0	0	0
OTHER	3	2	3	2	0	0	0	0	0	0	0	0	0	0
TOTAL	433	413	241	231	4	1	6	5	182	175	0	0	0	0

42-A6 SEPTIC TANKS

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UPGRADE	75	5	60	4	0	0	0	0	15	0	0	0	0	0
ENLARGE AND UPGRADE	3	0	1	0	0	0	0	0	2	0	0	0	0	0
NEW PROCESS	130	45	0	0	16	2	72	20	0	0	0	0	42	23
REPLACE	7	0	6	0	0	0	0	0	1	0	0	0	0	0
ABANDON	52	13	17	10	0	0	0	0	35	3	0	0	0	0
NO CHANGE	41	9	36	8	0	0	0	0	5	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	308	73	120	23	16	2	72	20	58	4	0	0	42	23

42-A7 ELECTRODIALYSIS

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO CHANGE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0

42-A8 REVERSE OSMOSIS

	PROCESS TOTAL		TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
			NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	2	56	0	0	0	0	2	56	0	0	0	0	0	0
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO CHANGE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	2	56	0	0	0	0	2	56	0	0	0	0	0	0

42-AY PRESSURE FILTERS

			TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
	PROCESS TOTAL		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTs	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	2	15	0	0	0	0	2	15	0	0	0	0	0	0
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	1	5	1	5	0	0	0	0	0	0	0	0	0	0
NO CHANGE	2	12	1	9	0	0	0	0	1	2	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	5	32	2	15	0	0	2	15	1	2	0	0	0	0

42-AA SEEPAGE LAGOONS

			TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
	PROCESS TOTAL		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	159	209	20	133	0	0	0	0	139	75	0	0	0	0
UPGRADE	13	20	6	7	0	0	0	0	7	13	0	0	0	0
ENLARGE AND UPGRADE	8	18	5	18	0	0	0	0	3	0	0	0	0	0
NEW PROCESS	542	428	0	0	42	30	122	101	0	0	0	0	378	296
REPLACE	19	9	5	2	0	0	0	0	14	6	0	0	0	0
ABANDON	45	56	30	31	0	0	0	0	15	24	0	0	0	0
NO CHANGE	585	657	562	613	0	0	0	0	23	44	0	0	0	0
OTHER	1	0	1	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1,372	1,391	629	798	42	30	122	101	201	165	0	0	378	296

42-AB ROCK FILTERS

			TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
	PROCESS TOTAL		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	10	12	0	0	0	0	7	12	0	0	0	0	3	0
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	1	22	1	22	0	0	0	0	0	0	0	0	0	0
NO CHANGE	3	2	3	2	0	0	0	0	0	0	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	14	37	4	25	0	0	7	12	0	0	0	0	3	0

42-AC POLYMER ADDITION TO LIQUID STREAM

			TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
	PROCESS TOTAL		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	1	3	0	0	0	0	0	0	1	3	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	1	3,179	1	3,179	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	84	633	0	0	6	25	18	506	0	0	0	0	60	101
REPLACE	1	14	1	14	0	0	0	0	0	0	0	0	0	0
ABANDON	4	342	2	357	0	0	0	0	2	4	0	0	0	0
NO CHANGE	32	1,185	29	886	0	0	0	0	3	299	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	123	5,379	33	4,438	6	25	18	506	6	307	0	0	60	101

42-AD POLYMER ADDITION TO SLUDGE STREAM

			TYPE 1 ESTIMATE						TYPE 2 ESTIMATE					
	PROCESS TOTAL		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED		NOW IN USE		UNDER CONSTRUCTION		REQUIRED BUT NOT FUNDED	
	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW	PLANTS	FLOW
ENLARGE	5	146	1	104	0	0	0	0	4	42	0	0	0	0
UPGRADE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ENLARGE AND UPGRADE	1	3	1	3	0	0	0	0	0	0	0	0	0	0
NEW PROCESS	88	2,171	0	0	4	128	14	1,643	0	0	0	0	70	398
REPLACE	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABANDON	1	0	1	0	0	0	0	0	0	0	0	0	0	0
NO CHANGE	27	1,948	25	1,864	0	0	0	0	2	83	0	0	0	0
OTHER	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	122	4,278	28	1,973	4	128	14	1,643	6	125	0	0	70	398

TABLE 43

DISTRIBUTION OF LIQUID LINE TREATMENT PROCESSES BY DESIGN CAPACITY, WITHIN EPA REGION (EXISTING)

Table 43 summarizes the common groupings of liquid line treatment processes used in existing treatment plants.

Information is provided for each EPA Region with a national total at the bottom of the table. The Regions are subdivided into five flow ranges, based on present design capacity, so that the size of the plant, as well as the geographical location, can be related to the different processes.

The All Plants column gives the total number of each Region's plants that fall within the various flow ranges and the total present flow capacity represented by these plants.

The subsequent columns show which liquid line treatment processes are in use, listing the number of plants and the associated flow. The processes are grouped into general categories such as lagoons or trickling filters which may cover several related processes. For example, lagoons could be stabilization ponds, aerated lagoons, or seepage lagoons.

A single plant may have an entry in more than one category; therefore, the sum of the categories may exceed the total listed under All Plants. Entries are made in the Other column only if a plant does not qualify for any of the process categories. The Other column includes conventional primary treatment plants, Imhoff tanks, physical/chemical treatment plants, and other miscellaneous treatment facilities.

All flows are reported in million gallons per day.

DECEMBER 31, 1982
TABLE 43

1982 NEEDS SURVEY
DISTRIBUTION OF LIQUID LINE TREATMENT PROCESSES BY DESIGN CAPACITY, WITHIN EPA REGION
(EXISTING)

EPA REGION & FLOW RANGE (MGD)	ALL PLANTS		LAGOONS		LAND TREATMENT		ACTIVATED SLUDGE		OXIDATION DITCH		TRICKLING FILTER		RBC		OTHER	
	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW
0.00- 0.10	62	3.4	18	1.1	3	0.3	22	1.3	6	0.4	3	0.1	1	0.1	12	0.6
0.11- 0.50	131	37.4	32	8.0	1	0.2	72	22.0	9	2.1	9	2.4	1	0.5	13	3.6
0.51- 1.00	69	52.3	12	8.1	2	1.2	36	27.9	4	2.5	8	5.7	1	0.7	9	8.1
1.01-10.00	172	549.5	13	38.1	0	0.0	114	379.4	0	0.0	26	83.5	3	7.0	26	83.9
10.01 +	45	1470.8	0	0.0	0	0.0	35	1139.2	0	0.0	4	52.6	0	0.0	8	309.0
REGION I	479	2113.2	75	55.1	6	1.6	279	1569.7	19	4.9	50	144.2	6	8.2	68	405.1
0.00- 0.10	78	4.6	11	0.6	0	0.0	48	2.8	0	0.0	8	0.7	0	0.0	16	0.9
0.11- 0.50	234	69.2	26	8.3	2	0.6	108	32.2	1	0.2	72	21.6	9	2.8	40	11.1
0.51- 1.00	110	84.3	6	5.1	0	0.0	61	47.5	2	1.6	30	22.2	1	1.0	16	12.1
1.01-10.00	244	842.8	22	66.6	2	15.5	121	475.2	0	0.0	82	236.0	5	20.3	36	111.3
10.01 +	62	3494.0	3	325.0	0	0.0	46	2494.1	0	0.0	4	58.0	1	16.0	12	728.0
REGION II	728	4494.7	68	405.5	4	16.1	384	3051.6	3	1.8	196	338.3	16	40.0	120	863.2
0.00- 0.10	254	13.8	59	3.3	3	0.2	145	7.8	3	0.3	20	1.5	0	0.0	31	1.5
0.11- 0.50	459	127.1	74	18.2	4	1.0	261	72.2	8	2.4	68	21.5	4	1.3	59	17.1
0.51- 1.00	152	115.9	14	9.6	1	0.6	94	72.7	0	0.0	31	25.3	6	5.4	16	10.9
1.01-10.00	276	910.0	13	36.7	3	10.4	185	636.1	0	0.0	78	252.9	11	34.1	21	71.4
10.01 +	49	2377.3	3	135.0	0	0.0	40	1997.5	0	0.0	6	336.0	1	54.0	5	230.3
REGION III	1,190	3544.0	163	202.6	11	12.1	725	2786.2	11	2.6	203	637.0	22	94.7	132	331.1
0.00- 0.10	575	26.8	246	15.2	8	0.5	142	8.0	6	0.6	8	0.7	1	0.1	190	3.9
0.11- 0.50	916	250.9	442	111.4	7	1.6	358	103.7	29	9.3	125	39.9	3	0.7	27	6.6
0.51- 1.00	299	236.0	104	76.7	8	7.0	146	120.6	3	2.3	86	70.3	2	1.4	3	2.4
1.01-10.00	540	1890.7	117	357.1	12	43.9	345	1281.3	11	31.8	191	690.0	10	38.5	11	32.1
10.01 +	76	2317.4	7	133.6	1	15.0	68	2180.7	0	0.0	16	283.3	2	36.0	1	18.0
REGION IV	2,406	4721.6	916	693.8	36	67.9	1,059	3694.2	49	43.8	426	1084.0	18	76.7	232	62.8
0.00- 0.10	970	57.8	570	33.9	30	1.9	298	17.2	11	0.8	88	6.3	5	0.4	50	3.0
0.11- 0.50	1,277	316.2	552	123.4	40	8.6	459	124.1	49	12.4	290	77.5	34	11.0	61	15.3
0.51- 1.00	342	253.7	92	67.2	10	7.6	177	136.2	7	4.8	114	84.0	22	15.1	12	9.8
1.01-10.00	516	1568.4	66	154.9	6	8.4	361	1155.1	5	9.5	120	346.0	43	120.3	26	84.3
10.01 +	128	6826.8	10	198.0	1	42.0	110	6389.1	2	27.5	23	765.2	4	83.7	4	130.4
REGION V	3,233	9022.7	1,290	577.2	87	68.3	1,405	7821.5	74	54.9	635	1278.7	108	230.4	153	242.7
0.00- 0.10	842	43.7	533	28.4	144	7.1	252	10.8	76	5.2	25	1.8	0	0.0	8	0.3
0.11- 0.50	955	251.8	466	110.1	108	26.0	293	85.9	143	38.8	120	37.1	2	0.7	14	4.0
0.51- 1.00	289	226.7	98	74.4	18	13.2	114	91.3	53	39.3	64	54.4	2	1.5	1	0.8
1.01-10.00	398	1190.1	104	276.8	32	73.5	186	595.2	40	100.1	138	426.8	4	21.4	2	5.9
10.01 +	48	1504.0	8	146.1	2	34.4	36	1296.7	1	10.1	16	503.6	1	12.0	2	32.0
REGION VI	2,532	3216.1	1,209	635.7	304	154.1	881	2079.8	313	193.4	363	1023.6	9	35.6	27	42.9
0.00- 0.10	1,246	60.8	991	45.2	7	0.5	131	7.0	15	1.2	121	8.7	2	0.2	13	0.5
0.11- 0.50	681	161.1	369	79.0	10	3.2	81	23.1	44	12.8	207	51.7	23	7.0	7	1.6
0.51- 1.00	129	96.9	50	36.6	2	1.4	38	29.2	13	9.2	48	37.3	4	2.9	1	0.8
1.01-10.00	162	486.8	32	69.5	0	0.0	45	179.5	10	15.6	84	256.7	14	37.5	3	7.4
10.01 +	25	1064.6	3	125.0	0	0.0	12	390.4	0	0.0	11	277.6	0	0.0	6	486.0
REGION VII	2,243	1869.9	1,445	355.1	19	4.9	307	628.9	82	38.7	471	631.8	43	47.4	30	496.1
0.00- 0.10	691	28.7	644	26.1	8	0.4	37	1.9	5	0.3	10	0.7	1	0.1	12	0.6
0.11- 0.50	294	69.8	263	62.5	12	2.2	25	6.6	7	2.0	15	3.7	1	0.3	2	0.4
0.51- 1.00	68	53.0	47	35.5	1	0.8	12	8.9	6	4.6	10	9.2	2	1.2	2	1.9
1.01-10.00	114	371.7	42	120.8	3	14.1	44	132.6	5	15.4	44	191.6	6	21.3	2	5.1
10.01 +	15	481.3	2	25.7	1	11.2	8	315.5	0	0.0	7	177.1	0	0.0	0	0.0
REGION VIII	1,182	1004.3	998	270.5	25	28.5	126	465.3	23	22.2	86	382.3	10	22.7	18	7.9
0.00- 0.10	198	10.3	159	8.3	43	1.9	55	2.9	0	0.0	8	0.6	1	0.1	12	0.5
0.11- 0.50	239	67.7	187	51.8	88	25.1	69	20.0	9	3.1	24	7.3	1	0.4	6	1.9
0.51- 1.00	92	71.6	63	47.7	34	26.1	27	21.8	9	7.5	20	15.3	0	0.0	1	1.0
1.01-10.00	206	727.0	107	385.5	66	232.3	107	425.6	6	12.0	50	173.6	4	13.7	14	41.1
10.01 +	65	3166.6	14	378.9	9	237.1	43	2086.6	1	13.3	16	444.4	2	34.8	11	788.6
REGION IX	800	4043.0	530	872.1	240	522.2	301	2556.8	25	35.8	118	641.0	8	49.0	44	833.0
0.00- 0.10	184	10.5	140	8.0	32	1.9	34	2.1	2	0.2	3	0.3	2	0.2	9	0.3
0.11- 0.50	226	59.3	106	25.8	20	5.1	60	20.6	20	4.8	35	9.6	5	1.3	6	1.9
0.51- 1.00	71	55.1	30	22.6	7	5.6	21	16.9	5	3.9	19	14.8	2	1.7	4	3.2
1.01-10.00	135	441.4	38	100.8	14	46.5	68	189.3	5	10.5	30	116.6	8	14.2	16	70.9
10.01 +	22	672.6	2	71.0	1	18.3	14	382.5	0	0.0	4	84.1	0	0.0	3	170.0
REGION X	638	1238.7	316	228.1	74	77.3	197	611.2	32	19.3	91	225.2	17	17.3	38	246.3
0.00- 0.10	5,100	259.9	3,371	169.7	278	14.3	1,164	61.4	124	8.7	294	20.9	13	0.9	353	11.7
0.11- 0.50	5,412	1410.0	2,517	598.1	292	73.1	1,794	509.9	319	87.6	965	271.9	83	25.7	235	63.1
0.51- 1.00	1,621	1245.0	516	383.2	83	63.1	726	572.5	102	75.5	430	330.1	42	8.7	65	50.6
1.01-10.00	2,763	8978.1	554	1606.2	138	444.4	1,568	5449.1	82	194.6	843	2774.1	108	327.9	157	513.2
10.01 +	535	23375.1	52	1538.3	15	358.0	412	18672	4	50.9	107	2981.0	11	236.5	52	2892.3
ALL REGIONS	15,431	35267.8	7,010	4295.2	806	952.6	5,664	25265	631	417.0	2,639	6386.6	257	621.5	862	3530.6

TABLE 44

DISTRIBUTION OF LIQUID LINE TREATMENT PROCESSES BY DESIGN CAPACITY, WITHIN EPA REGION
(YEAR 2000)

Table 44 summarizes the common groupings of liquid line treatment processes expected to be used in treatment plants operating in the year 2000.

Information is provided for each EPA Region with a national total at the bottom of the table. The Regions are subdivided into five flow ranges, based on projected design capacity, so that the size of the plant, as well as the geographical location, can be related to the different processes.

The All Plants column gives the total number of each Region's plants that are projected to fall within the various flow ranges and the total projected design capacity represented by these plants.

The subsequent columns show which liquid line treatment processes the plants are projected to use, listing the number of plants and the associated flow. The processes are grouped into general categories such as lagoons or trickling filters which may cover several related processes. For example, lagoons could be stabilization ponds, aerated lagoons, or seepage lagoons.

A single plant may have an entry in more than one category; therefore, the sum of the categories may exceed the total listed under All Plants. Entries are made in the Other column only if a plant does not qualify for any of the process categories. The Other column includes conventional primary treatment plants, Imhoff tanks, physical/chemical treatment plants, and other miscellaneous treatment facilities.

All flows are reported in million gallons per day.

DECEMBER 31, 1982
TABLE 44

1982 NEEDS SURVEY
DISTRIBUTION OF LIQUID LINE TREATMENT PROCESSES BY DESIGN CAPACITY, WITHIN EPA REGION
(YEAR 2000)

EPA REGION & FLOW RANGE (MGD)	ALL PLANTS		LAGOONS		LAND TREATMENT		ACTIVATED SLUDGE		OXIDATION DITCH		TRICKLING FILTER		RBC		OTHER	
	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW
0.00- 0.10	187	10.2	59	3.3	26	1.2	55	3.3	4	0.4	1	0.1	7	0.4	54	2.9
0.11- 0.50	208	55.1	65	15.9	10	2.6	96	26.9	16	4.3	3	1.2	6	1.8	27	5.9
0.51- 1.00	71	50.5	12	7.9	3	1.9	42	30.7	6	4.0	3	2.3	8	6.6	3	1.0
1.01-10.00	210	691.6	21	50.3	2	3.0	156	533.0	2	5.4	25	94.5	20	68.2	1	6.1
10.01 +	50	1678.7	0	0.0	0	0.0	48	1654.8	0	0.0	5	66.0	3	104.6	0	0.0
REGION I	726	2486.0	157	77.3	41	8.4	397	2248.5	28	13.8	37	163.9	44	181.4	85	16.5
0.00- 0.10	267	14.4	164	8.7	0	0.0	76	4.7	2	0.2	3	0.2	2	0.1	31	1.3
0.11- 0.50	324	81.1	126	25.3	3	1.0	150	42.2	12	2.8	43	12.9	19	6.0	7	1.6
0.51- 1.00	118	89.6	18	14.3	3	2.3	70	52.3	8	6.4	29	21.8	6	4.9	2	1.7
1.01-10.00	263	960.2	34	133.1	2	13.5	177	678.3	6	19.2	67	230.5	19	66.1	2	3.9
10.01 +	82	4344.7	3	400.0	0	0.0	74	4185.9	2	38.0	7	139.7	3	54.9	0	0.0
REGION II	1,054	5489.8	345	581.3	8	16.7	547	4963.2	30	66.6	149	404.9	49	131.8	42	8.4
0.00- 0.10	803	44.0	470	26.2	11	0.5	283	15.4	10	0.8	10	0.7	4	0.3	35	1.4
0.11- 0.50	896	228.7	314	61.3	13	3.3	487	137.7	28	9.1	39	12.9	23	7.4	30	8.7
0.51- 1.00	239	176.4	18	13.7	4	2.8	192	140.5	11	8.5	24	18.4	14	11.9	1	0.6
1.01-10.00	351	1056.1	13	26.1	3	10.2	259	809.8	6	12.1	77	238.0	33	89.6	2	12.3
10.01 +	62	2869.0	6	204.2	0	0.0	59	2759.5	0	0.0	5	328.5	3	320.4	0	0.0
REGION III	2,351	4373.9	821	331.3	31	16.6	1,280	3862.6	55	30.5	155	598.3	77	429.5	68	22.8
0.00- 0.10	1,077	51.2	512	23.6	21	1.4	368	28.0	10	0.9	5	0.4	6	0.5	6	0.2
0.11- 0.50	1,014	248.0	440	103.0	62	14.7	542	134.4	49	14.4	36	11.9	23	6.5	3	0.6
0.51- 1.00	308	229.0	100	73.7	21	15.7	196	148.9	22	15.8	39	28.6	20	14.3	0	0.0
1.01-10.00	655	2277.8	135	426.9	61	241.2	468	1682.8	38	117.8	175	648.4	46	152.5	4	23.3
10.01 +	126	3967.2	23	584.7	7	150.1	114	3586.1	1	12.0	27	620.8	8	173.2	1	11.4
REGION IV	3,180	6773.1	1,210	1211.6	172	422.8	1,688	5579.9	120	160.7	282	1309.9	103	346.7	14	35.4
0.00- 0.10	1,418	79.1	916	51.6	73	4.3	444	24.9	34	2.4	41	3.0	16	1.3	36	1.2
0.11- 0.50	1,369	333.8	722	164.3	79	18.4	511	131.5	104	25.9	169	49.7	84	26.3	5	1.3
0.51- 1.00	351	256.4	109	79.2	16	10.7	192	142.9	18	12.6	80	58.0	47	34.4	1	0.8
1.01-10.00	586	1822.2	90	226.5	12	21.4	430	1415.7	17	35.1	123	367.8	81	243.2	0	0.0
10.01 +	140	7702.6	10	231.8	1	52.0	122	7245.9	2	27.5	25	836.1	7	126.9	2	68.2
REGION V	3,864	10193.9	1,847	753.3	181	106.6	1,699	8960.7	175	103.3	438	1314.3	235	432.1	44	71.4
0.00- 0.10	1,797	84.7	1,374	63.5	146	7.1	292	13.2	182	10.6	4	0.3	1	0.1	2	0.2
0.11- 0.50	1,198	289.7	649	145.4	150	37.4	374	98.1	198	52.1	46	14.5	2	0.7	2	0.7
0.51- 1.00	356	265.6	100	73.4	33	23.3	151	114.8	105	76.1	50	40.1	7	5.3	0	0.0
1.01-10.00	475	1441.7	112	310.0	38	97.3	258	848.6	68	172.2	117	376.1	11	56.2	1	6.0
10.01 +	67	2140.7	9	173.5	3	51.9	51	1888.4	5	75.7	16	574.4	5	66.7	0	0.0
REGION VI	3,893	4222.2	2,244	765.6	370	216.8	1,126	2962.9	558	386.5	233	1005.2	26	128.9	5	6.8
0.00- 0.10	1,445	65.6	1,278	55.3	15	0.9	107	6.0	29	2.1	58	3.9	3	0.3	0	0.0
0.11- 0.50	687	160.8	378	81.0	21	5.5	103	25.7	108	28.4	122	31.3	48	14.1	2	0.5
0.51- 1.00	143	102.3	50	35.0	4	2.8	39	29.5	32	22.7	37	25.9	14	10.3	0	0.0
1.01-10.00	186	561.5	31	82.2	3	8.6	59	236.5	21	42.5	79	237.5	30	76.6	1	1.4
10.01 +	32	1139.8	5	178.7	0	0.0	26	985.3	0	0.0	14	387.2	1	52.0	0	0.0
REGION VII	2,493	2029.8	1,742	431.9	43	17.6	334	1282.9	190	95.6	310	685.6	96	153.1	3	1.9
0.00- 0.10	771	31.0	740	29.7	20	0.7	31	1.4	5	0.4	2	0.2	1	0.1	2	0.1
0.11- 0.50	338	76.8	301	67.5	20	4.3	31	8.4	14	4.0	11	2.8	2	0.6	0	0.0
0.51- 1.00	69	49.7	49	34.6	3	2.1	12	9.4	8	6.0	5	3.8	2	1.2	0	0.0
1.01-10.00	137	411.2	62	169.0	10	34.3	46	148.6	15	43.0	36	134.0	12	35.5	0	0.0
10.01 +	19	664.0	3	54.4	2	24.7	10	384.5	0	0.0	10	308.8	1	18.5	0	0.0
REGION VIII	1,334	1232.5	1,155	355.0	55	65.9	130	552.3	42	53.3	64	449.3	18	55.8	2	0.1
0.00- 0.10	421	22.4	394	21.1	92	4.2	42	1.9	0	0.0	5	0.4	5	0.4	6	0.3
0.11- 0.50	371	98.5	319	75.1	113	30.1	74	21.8	10	3.6	18	5.4	6	1.6	0	0.0
0.51- 1.00	127	94.8	92	67.7	54	40.1	50	37.3	10	8.0	15	11.2	3	2.2	0	0.0
1.01-10.00	245	859.8	134	490.1	100	367.0	134	540.5	12	22.4	56	202.1	20	57.8	2	3.5
10.01 +	69	3323.4	18	471.6	17	463.3	48	2227.4	1	13.3	17	520.8	2	39.8	6	636.2
REGION IX	1,233	4398.7	957	1125.4	376	904.5	348	2828.8	33	47.2	111	739.6	36	101.6	14	639.9
0.00- 0.10	344	17.9	289	14.8	78	4.4	41	2.5	8	0.6	4	0.4	3	0.2	9	0.2
0.11- 0.50	298	74.8	145	32.3	51	12.1	113	30.8	31	8.5	23	7.3	8	2.0	3	0.9
0.51- 1.00	78	58.4	38	29.7	12	10.2	28	20.3	10	7.0	18	13.9	3	2.3	0	0.0
1.01-10.00	152	508.3	40	116.2	18	54.6	82	298.4	8	14.6	35	144.0	17	47.4	1	4.0
0.01 +	27	887.0	3	83.0	2	30.3	20	586.3	0	0.0	6	139.8	1	11.7	1	175.0
REGION X	899	1546.1	515	275.8	161	111.5	284	938.1	57	30.5	86	305.3	32	63.5	14	180.1
0.00- 0.10	8,530	420.1	6,196	297.4	482	24.4	1,939	100.9	284	18.0	133	9.1	48	3.2	181	7.5
0.11- 0.50	6,703	1630.8	3,459	770.6	522	128.7	2,481	657.1	570	152.5	510	149.3	221	66.6	79	19.9
0.51- 1.00	1,860	1372.3	586	428.8	153	111.2	972	726.1	230	166.6	300	223.7	124	93.0	7	4.5
1.01-10.00	3,260	10589.9	672	2029.8	249	850.7	2,069	7191.9	193	483.8	790	2672.4	289	892.6	14	60.1
10.01 +	674	28716.6	80	2381.6	32	772.2	572	25504	11	166.5	132	3921.5	34	968.6	10	890.8
ALL REGIONS	21,027	42737.5	10,993	5908.0	1,438	1887.0	8,033	34179	1,288	987.2	1,865	6975.8	716	2023.9	291	983.0

TABLE 45

DISTRIBUTION OF SLUDGE TREATMENT PROCESSES BY DESIGN CAPACITY, WITHIN EPA REGION (EXISTING)

Table 45 summarizes the common groupings of sludge treatment processes presently used in existing treatment plants.

Information is provided for each EPA Region with a national total at the bottom of the table. The Regions are subdivided into five flow ranges, based on present design capacity, so that the size of the plant, as well as the geographical location, can be related to the different processes.

The All Plants column gives the total number of each Region's plants that fall within the various flow ranges and the total present design capacity represented by these plants.

The subsequent columns show which sludge treatment processes are in use, listing the number of plants and the associated flow. The processes are grouped into general categories such as aerobic digestion or incineration which may cover several related processes. For example, processes listed under Aerobic Digestion may use either air or pure oxygen for aeration.

A single plant may have an entry in more than one category; therefore, the sum of the categories may exceed the total listed under All Plants. Entries are made in the Other column only if a plant does not qualify for any of the process categories. There are almost 6,500 facilities in the Other column. The majority of these are lagoon facilities which normally have no sludge treatment processes.

All flows are reported in million gallons per day.

DECEMBER 31, 1982
TABLE 45

1982 NEEDS SURVEY
DISTRIBUTION OF SLUDGE TREATMENT PROCESSES BY DESIGN CAPACITY, WITHIN EPA REGION
(EXISTING)

EPA REGION & FLOW RANGE (MGD)	ALL PLANTS		AEROBIC DIGESTION		ANAEROBIC DIGESTION		AIR DRYING		INCINERATION		OTHER	
	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW
0.00- 0.10	62	3.4	7	0.3	4	0.2	28	1.5	0	0.0	28	1.7
0.11- 0.50	131	37.4	29	8.3	23	7.4	77	22.2	1	0.4	39	10.7
0.51- 1.00	69	52.3	15	10.5	26	20.9	36	28.3	0	0.0	16	11.4
1.01-10.00	172	549.3	18	41.6	75	254.0	53	145.1	18	81.8	61	177.0
10.01 +	45	1470.8	2	32.2	11	590.3	5	532.7	28	879.1	8	125.6
REGION I	479	2113.2	71	92.9	139	872.7	199	729.7	47	961.2	152	326.3
0.00- 0.10	78	4.6	20	1.4	25	1.6	41	2.8	6	0.4	20	1.0
0.11- 0.50	234	69.2	48	14.1	138	41.1	173	51.1	11	2.6	13	4.6
0.51- 1.00	110	84.3	25	19.4	68	53.0	74	55.6	8	6.4	10	8.0
1.01-10.00	244	842.8	26	86.3	161	512.6	98	272.7	37	190.3	39	141.5
10.01 +	62	3494.0	3	62.3	42	2765.8	11	527.0	25	849.3	5	361.0
REGION II	728	4494.7	122	183.4	434	3373.8	397	909.1	87	1048.8	87	515.9
0.00- 0.10	254	13.8	94	5.1	69	3.9	166	9.3	0	0.0	65	3.5
0.11- 0.50	459	127.1	131	35.0	215	64.2	365	104.4	3	1.1	56	12.7
0.51- 1.00	152	115.9	26	20.3	103	79.6	117	89.1	2	1.7	11	7.3
1.01-10.00	276	910.0	45	137.3	203	661.5	164	468.5	29	171.2	13	46.1
10.01 +	49	2377.3	3	39.0	35	1742.9	19	547.3	20	713.9	3	231.6
REGION III	1,190	3544.0	299	236.8	625	2552.0	831	1218.4	54	887.9	148	301.1
0.00- 0.10	575	26.8	99	5.6	19	1.2	146	8.7	0	0.0	416	17.5
0.11- 0.50	916	250.9	277	82.0	144	46.4	469	139.7	0	0.0	411	100.4
0.51- 1.00	299	236.0	95	78.1	86	70.6	205	167.9	0	0.0	83	59.2
1.01-10.00	540	1890.7	220	739.4	244	918.7	421	1420.0	15	70.7	52	151.8
10.01 +	76	2317.4	18	621.0	50	1474.1	39	1000.8	19	739.5	7	133.9
REGION IV	2,406	4721.6	709	1525.9	543	2510.8	1,280	2736.9	34	810.2	969	462.6
0.00- 0.10	970	57.6	189	11.9	127	8.6	288	18.2	8	0.3	581	33.4
0.11- 0.50	1,277	316.2	313	85.4	401	109.3	616	164.0	3	1.0	484	105.6
0.51- 1.00	342	253.7	118	90.4	185	139.2	233	175.3	1	0.8	44	29.5
1.01-10.00	516	1568.4	172	517.0	341	1068.6	300	824.0	18	90.3	43	127.5
10.01 +	128	6826.8	17	287.7	88	4853.3	35	2000.9	49	2988.7	12	849.9
REGION V	3,233	9022.7	809	992.3	1,142	6178.9	1,472	3182.2	79	3080.9	1,164	1145.7
0.00- 0.10	842	43.7	199	8.7	37	1.9	323	20.0	0	0.0	420	21.3
0.11- 0.50	955	251.8	250	75.4	110	32.1	589	164.5	2	0.8	340	79.9
0.51- 1.00	289	226.7	100	80.7	65	53.7	206	163.6	0	0.0	68	50.6
1.01-10.00	398	1190.1	166	525.2	128	400.8	276	763.4	12	61.1	76	222.8
10.01 +	48	1504.0	16	537.6	27	803.5	21	569.1	10	479.6	6	128.0
REGION VI	2,532	3216.1	731	1227.5	367	1291.9	1,415	1680.4	24	541.4	910	502.5
0.00- 0.10	1,246	60.5	120	7.4	76	4.6	117	7.7	3	0.2	1,003	45.9
0.11- 0.50	681	161.1	125	33.3	146	41.7	194	49.5	3	1.1	367	77.6
0.51- 1.00	129	96.9	46	35.2	37	28.2	42	31.8	5	3.2	42	30.2
1.01-10.00	162	486.8	33	109.7	90	290.7	73	192.8	8	35.5	34	80.2
10.01 +	25	1064.6	2	49.0	19	620.7	3	77.0	10	682.4	2	42.5
REGION VII	2,243	1869.9	326	234.5	368	985.7	429	358.7	29	722.2	1,448	276.2
0.00- 0.10	691	28.7	10	0.5	9	0.6	32	1.9	0	0.0	650	26.4
0.11- 0.50	294	69.6	10	2.9	17	4.1	36	9.4	0	0.0	254	59.4
0.51- 1.00	68	53.0	9	6.4	13	11.1	23	18.6	0	0.0	40	30.4
1.01-10.00	114	371.7	19	50.3	65	263.1	73	261.2	5	22.9	26	51.3
10.01 +	15	481.3	1	30.0	12	411.1	7	149.1	2	35.0	3	70.2
REGION VIII	1,182	1004.3	49	90.0	116	689.9	171	440.0	7	57.9	973	237.7
0.00- 0.10	198	10.3	15	1.0	24	1.4	29	2.0	0	0.0	144	7.2
0.11- 0.50	239	67.7	43	13.8	35	16.0	95	28.8	3	1.3	113	29.9
0.51- 1.00	92	71.6	20	15.1	29	24.3	51	40.2	0	0.0	33	25.1
1.01-10.00	206	727.0	42	147.8	126	461.1	116	376.4	9	40.6	34	121.2
10.91 +	65	3166.6	6	110.3	68	2625.1	23	1303.3	9	276.6	8	262.0
REGION IX	800	4043.0	126	287.9	282	3127.8	314	1750.5	21	318.4	332	445.3
0.00- 0.10	184	10.5	31	2.0	6	0.4	18	1.3	0	0.0	144	8.0
0.11- 0.50	226	59.3	68	19.7	43	12.1	80	23.2	4	1.4	103	24.1
0.51- 1.00	71	55.1	14	10.9	27	21.5	25	19.9	2	1.4	27	20.7
1.01-10.00	135	441.4	30	76.9	72	286.4	64	218.9	5	35.1	32	82.4
10.01 +	22	672.6	3	126.5	17	541.6	10	279.1	4	84.0	2	67.0
REGION X	638	1238.7	146	235.8	165	861.8	197	542.2	15	121.8	308	202.0
0.00- 0.10	5,100	259.9	784	43.5	396	24.1	1,188	73.0	17	0.8	3,471	165.3
0.11- 0.50	5,412	1410.0	1,294	369.5	1,292	373.9	2,694	756.3	30	9.5	2,180	504.3
0.51- 1.00	1,621	1245.0	468	366.7	639	501.7	1,012	789.8	18	13.3	374	272.1
1.01-10.00	2,763	8978.1	771	2431.4	1,505	5117.1	1,638	4942.6	156	799.1	410	1281.6
10.01 +	535	23375.1	71	1895.5	349	16428	173	6986.2	176	7727.9	56	2271.6
ALL REGIONS	15,431	35267.8	3,388	5106.5	4,181	22445	6,705	13548	397	8550.5	6,491	4414.8

TABLE 46

DISTRIBUTION OF SLUDGE TREATMENT PROCESSES BY DESIGN CAPACITY, WITHIN EPA REGION (YEAR 2000)

Table 46 summarizes the common groupings of sludge treatment processes expected to be used by treatment plants operating in the year 2000.

Information is provided for each EPA Region with a national total at the bottom of the table. The Regions are subdivided into five flow ranges, based on projected design capacity, so that the size of the plant, as well as the geographical location, can be related to the different processes.

The All Plants column gives the total number of each Region's plants that are projected to fall within the various flow ranges and the total projected design capacity represented by these plants.

The subsequent columns show which sludge treatment processes are projected to be in use, listing the number of plants and the associated flow. The processes are grouped into general categories such as aerobic digestion or incineration. These categories may cover several related processes. For example, processes listed under Aerobic Digestion may use either air or pure oxygen for aeration.

A single plant may have entries in more than one category; therefore, the sum of categories may exceed the total listed under All Plants. Entries are made in the Other column only if a plant does not qualify for any of the process categories. There are over 6,400 facilities in the Other column. The majority of these are lagoon facilities which normally have no sludge treatment processes.

All flows are reported in million gallons per day.

DECEMBER 31, 1982
TABLE 46

1982 NEEDS SURVEY
DISTRIBUTION OF SLUDGE TREATMENT PROCESSES BY DESIGN CAPACITY, WITHIN EPA REGION
(YEAR 2000)

EPA REGION & FLOW RANGE (MGD)	ALL PLANTS		AEROBIC DIGESTION		ANAEROBIC DIGESTION		AIR DRYING		INCINERATION		OTHER	
	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW
0.00- 0.10	187	10.2	13	0.7	12	0.7	55	3.3	0	0.0	120	6.4
0.11- 0.50	208	55.1	43	13.3	21	5.9	77	22.3	0	0.0	106	25.9
0.51- 1.00	71	50.5	19	13.9	12	9.1	27	19.5	0	0.0	26	17.9
1.01-10.00	210	691.6	28	69.0	80	292.3	57	167.8	21	92.2	76	233.2
10.01 +	50	1678.7	2	34.4	13	700.2	6	613.1	33	1429.2	8	124.0
REGION I	726	2486.0	105	131.0	138	1008.1	222	825.8	54	1521.3	336	407.1
0.00- 0.10	267	14.4	15	1.1	56	3.2	70	4.0	4	0.2	179	9.4
0.11- 0.50	324	81.1	62	18.2	132	37.4	175	49.9	10	2.5	110	21.2
0.51- 1.00	118	89.6	29	21.6	72	55.4	91	68.3	4	3.1	7	6.0
1.01-10.00	263	960.2	45	137.8	170	606.2	100	297.2	54	253.9	29	107.5
10.01 +	82	4344.7	4	120.9	43	1623.9	16	765.4	35	1410.5	18	1957.7
REGION II	1,054	5489.8	155	299.5	473	2325.9	452	1184.6	107	1670.1	343	2101.5
0.00- 0.10	803	44.0	214	11.7	92	5.3	308	16.9	1	0.1	476	26.1
0.11- 0.50	896	228.7	327	92.8	251	73.0	561	160.4	4	0.9	208	54.3
0.51- 1.00	239	176.4	95	67.4	132	99.9	167	124.4	3	2.2	9	6.3
1.01-10.00	351	1056.1	92	266.2	241	747.1	204	542.6	28	149.7	11	36.3
10.01 +	62	2869.0	8	141.7	47	2193.7	24	684.7	33	1838.2	1	21.6
REGION III	2,351	4373.9	736	579.6	763	3118.8	1,264	1528.9	69	1991.0	785	144.5
0.00- 0.10	1,077	51.2	340	16.9	167	8.4	569	28.4	2	0.1	499	22.4
0.11- 0.50	1,014	248.0	388	101.5	153	37.9	611	155.8	1	0.2	383	86.5
0.51- 1.00	308	229.0	137	102.9	74	55.2	227	170.1	1	0.6	67	49.1
1.01-10.00	655	2277.8	313	1081.2	266	1022.7	520	1753.0	14	69.8	51	141.9
10.01 +	126	3967.2	41	1077.5	75	2435.9	68	1688.8	23	985.5	10	373.0
REGION IV	3,180	6773.1	1,219	2379.8	735	3559.9	1,995	3795.9	41	1056.1	1,010	672.6
0.00- 0.10	1,418	79.1	322	18.5	119	7.7	405	23.8	8	0.3	921	49.0
0.11- 0.50	1,369	333.8	410	104.8	303	90.0	614	162.2	1	0.2	597	129.1
0.51- 1.00	351	256.4	133	98.0	159	117.6	221	163.6	2	1.8	69	48.1
1.01-10.00	586	1822.2	220	661.1	382	1237.2	356	1011.1	17	105.9	41	113.8
10.01 +	140	7702.6	22	746.8	99	5723.9	36	2155.8	55	3333.5	11	839.9
REGION V	3,864	10193.9	1,107	1629.0	1,067	7176.1	1,632	3516.4	83	3441.6	1,639	1180.6
0.00- 0.10	1,797	84.7	266	12.0	35	1.7	437	24.7	1	0.1	1,271	57.9
0.11- 0.50	1,198	289.7	349	90.5	58	17.9	662	172.4	2	0.8	313	111.3
0.51- 1.00	356	265.6	153	116.7	54	40.6	284	212.6	0	0.0	61	44.5
1.01-10.00	475	1441.7	231	760.8	126	429.8	347	998.6	15	83.8	73	201.3
10.01 +	67	2149.7	22	764.9	32	1122.6	26	808.1	12	608.7	10	107.1
REGION VI	3,893	4222.2	1,021	1744.7	305	1612.4	1,756	2216.2	30	693.3	1,928	601.8
0.00- 0.10	1,445	65.6	95	5.9	61	3.7	73	4.7	1	0.1	1,260	54.8
0.11- 0.50	687	160.8	148	38.1	134	37.1	189	50.1	0	0.0	368	77.3
0.51- 1.00	143	102.3	55	40.4	42	30.2	42	31.4	3	2.1	42	28.0
1.01-10.00	186	561.5	46	132.9	101	319.5	85	225.8	9	40.3	37	100.2
10.01 +	32	1139.8	7	377.8	25	779.3	3	84.0	13	677.6	0	0.0
REGION VII	2,493	2029.8	351	594.9	363	1169.6	392	395.9	26	719.9	1,715	260.2
0.00- 0.10	771	31.0	10	0.5	6	0.4	23	1.3	0	0.0	742	29.6
0.11- 0.50	330	76.8	15	4.2	17	4.3	44	11.7	1	0.2	288	63.7
0.51- 1.00	69	49.7	12	9.1	10	7.3	20	14.8	0	0.0	44	31.0
1.01-10.00	137	411.2	27	82.7	60	208.8	71	230.6	3	14.1	42	97.6
10.01 +	19	664.0	1	30.0	18	652.8	11	312.7	2	60.0	1	11.2
REGION VIII	1,334	1232.5	65	126.3	111	873.3	169	571.0	6	74.3	1,117	232.9
0.00- 0.10	421	22.4	14	0.8	22	1.3	25	1.5	0	0.0	373	19.8
0.11- 0.50	371	90.5	41	12.0	62	17.9	100	30.6	0	0.0	244	53.2
0.51- 1.00	127	94.8	32	23.7	28	21.3	59	43.5	0	0.0	54	40.6
1.01-10.00	245	859.8	53	156.4	143	559.3	141	450.3	10	55.9	44	152.5
10.01 +	69	3323.4	10	213.9	51	2739.9	27	1557.5	12	904.2	8	300.7
REGION IX	1,233	4390.7	150	406.6	306	3339.5	352	2091.2	22	960.0	723	566.6
0.00- 0.10	344	17.9	42	2.7	6	0.5	23	1.8	1	0.1	294	14.7
0.11- 0.50	290	74.8	110	30.5	34	9.6	112	30.9	3	1.2	142	31.3
0.51- 1.00	78	58.4	25	17.2	20	15.5	33	24.0	4	2.6	29	23.0
1.01-10.00	152	508.3	47	134.8	73	311.9	77	247.2	9	44.5	33	91.4
10.01 +	27	887.0	4	149.7	21	705.6	10	311.5	4	87.9	3	113.5
REGION X	899	1546.1	228	334.6	154	1042.9	255	615.1	21	136.2	501	273.8
0.00- 0.10	8,530	420.1	1,331	70.3	576	32.4	1,988	109.9	18	0.8	6,143	298.4
0.11- 0.50	6,703	1638.8	1,893	505.5	1,170	330.6	3,145	846.0	22	5.8	3,039	653.2
0.51- 1.00	1,860	1372.3	690	510.4	603	451.6	1,171	871.9	17	12.1	408	294.0
1.01-10.00	3,260	10589.9	1,102	3482.4	1,642	5734.3	1,958	5931.6	180	989.7	437	1275.3
10.01 +	674	28716.6	121	3657.2	424	18677	227	8981.3	222	11335	70	3928.5
ALL REGIONS	21,027	42737.5	5,137	8225.7	4,415	25226	8,489	16740	459	12263	10,097	6441.2

TABLE 47

DISTRIBUTION OF SLUDGE DISPOSAL METHODS BY DESIGN CAPACITY, WITHIN EPA REGION (EXISTING)

Table 47 summarizes the common groupings of sludge disposal methods presently used by existing treatment plants.

Information is provided for each EPA Region with a national total at the bottom of the table. The Regions are subdivided into five flow ranges, based on present design capacity, so that the size of the plant, as well as the geographical location, can be related to the different sludge disposal methods.

The All Plants column gives the total number of each Region's plants that fall within the various flow ranges and the total present design capacity represented by these plants.

The subsequent columns show which sludge disposal method the plants use, listing the number of plants and the associated flow. The methods are listed under specific headings such as Land Fill or Ocean Dumping.

A single plant may use more than one sludge disposal method; therefore, the sum of the methods may exceed the total listed under All Plants. Entries are made in the Other column only if a plant does not qualify for any of the identified methods. There are over 6,000 facilities in the Other column. The majority of these are lagoon facilities which normally have no sludge disposal.

All flows are reported in million gallons per day.

DECEMBER 31, 1982
TABLE 47

1982 NEEDS SURVEY
DISTRIBUTION OF SLUDGE DISPOSAL METHODS
BY DESIGN CAPACITY, WITHIN EPA REGION
(EXISTING)

EPA REGION & FLOW RANGE (MGD)	ALL PLANTS		LAND FILL		LAND APPLICATION		OCEAN DUMPING		COMPOSTING		OTHER	
	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW
0.00- 0.10	62	3.4	38	2.1	4	0.3	0	0.0	0	0.0	22	1.3
0.11- 0.50	131	37.4	101	29.6	7	2.2	0	0.0	0	0.0	25	6.5
0.51- 1.00	69	52.3	55	41.1	7	5.6	0	0.0	0	0.0	10	7.9
1.01-10.00	172	549.5	149	478.2	11	31.0	0	0.0	5	18.5	17	50.4
10.01 +	45	1470.8	43	1102.8	1	25.0	0	0.0	1	11.5	1	343.0
REGION I	479	2113.2	386	1653.6	30	63.9	0	0.0	6	30.0	75	408.9
0.00- 0.10	78	4.6	71	4.4	3	0.3	1	0.1	0	0.0	5	0.2
0.11- 0.50	234	69.2	220	64.6	3	0.9	3	1.3	0	0.0	8	2.5
0.51- 1.00	110	84.3	102	79.0	0	0.0	4	2.7	0	0.0	4	2.8
1.01-10.00	244	842.8	227	767.6	7	24.8	10	49.0	0	0.0	3	14.0
10.01 +	62	3494.0	43	1299.0	0	0.0	21	2340.0	0	0.0	1	18.0
REGION II	728	4494.7	663	2214.3	13	26.0	39	2393.0	0	0.0	21	37.3
0.00- 0.10	254	13.8	198	11.1	13	0.8	0	0.0	0	0.0	48	2.4
0.11- 0.50	459	127.1	392	109.3	45	13.1	0	0.0	0	0.0	32	7.4
0.51- 1.00	152	115.9	129	97.9	17	13.6	0	0.0	0	0.0	8	6.1
1.01-10.00	276	910.0	236	760.5	45	174.5	1	2.8	2	2.8	8	19.2
10.01 +	49	2377.3	38	1690.8	11	814.5	1	140.0	4	514.0	2	175.0
REGION III	1,190	3544.0	993	2669.4	131	1016.3	2	142.8	6	516.8	98	209.9
0.00- 0.10	575	26.8	133	7.9	23	1.3	0	0.0	0	0.0	421	17.8
0.11- 0.50	916	250.9	426	127.0	69	21.3	2	0.6	2	0.8	430	106.1
0.51- 1.00	299	236.0	188	152.8	28	24.4	0	0.0	0	0.0	88	63.0
1.01-10.00	540	1890.7	409	1428.4	100	424.6	0	0.0	0	0.0	59	166.1
10.01 +	76	2317.4	59	1777.0	11	233.3	0	0.0	1	35.0	10	408.2
REGION IV	2,406	4721.6	1,215	3492.9	231	704.7	2	0.6	3	35.8	1,008	760.9
0.00- 0.10	970	57.8	216	12.8	228	14.5	0	0.0	1	0.1	551	32.1
0.11- 0.50	1,277	316.2	413	111.5	444	117.9	0	0.0	0	0.0	463	99.1
0.51- 1.00	342	253.7	164	124.0	148	110.3	0	0.0	0	0.0	50	34.6
1.01-10.00	516	1568.4	282	830.6	246	811.5	0	0.0	0	0.0	30	69.6
10.01 +	128	6826.8	82	4134.2	43	2611.7	0	0.0	0	0.0	9	1438.0
REGION V	3,233	9022.7	1,157	5213.0	1,109	3665.6	0	0.0	1	0.1	1,103	1673.1
0.00- 0.10	842	43.7	467	24.6	28	1.9	0	0.0	0	0.0	369	18.8
0.11- 0.50	955	251.8	643	177.5	80	22.1	0	0.0	0	0.0	301	70.6
0.51- 1.00	289	226.7	218	173.2	30	23.6	0	0.0	0	0.0	60	44.7
1.01-10.00	398	1190.1	329	1017.0	70	219.6	0	0.0	2	11.3	48	114.6
10.01 +	48	1504.0	40	1350.0	13	586.4	0	0.0	2	45.8	7	134.0
REGION VI	2,532	3216.1	1,697	2742.1	221	853.3	0	0.0	4	57.1	785	382.6
0.00- 0.10	1,246	60.8	150	8.9	136	8.6	0	0.0	0	0.0	982	44.7
0.11- 0.50	681	161.1	200	53.6	152	41.4	0	0.0	0	0.0	353	72.6
0.51- 1.00	129	96.9	57	43.3	48	37.7	0	0.0	1	0.8	33	23.6
1.01-10.00	162	486.8	102	328.1	62	184.6	0	0.0	2	2.8	21	45.8
10.01 +	25	1064.6	21	937 1	2	65.0	0	0.0	0	0.0	3	92.5
REGION VII	2,243	1869.9	530	1370.7	402	337.1	0	0.0	3	3.6	1,392	279.0
0.00- 0.10	691	28.7	23	1.1	21	1.4	0	0.0	0	0.0	648	26.4
0.11- 0.50	294	69.8	20	5.2	28	4.9	0	0.0	0	0.0	255	60.0
0.51- 1.00	68	53.0	16	12.8	13	10.9	0	0.0	0	0.0	39	29.3
1.01-10.00	114	371.7	55	181.5	43	175.4	0	0.0	0	0.0	21	43.1
10.01 +	15	481.3	11	265.6	1	170.0	0	0.0	0	0.0	3	45.7
REGION VIII	1,102	1004.3	125	466.1	98	362.5	0	0.0	0	0.0	966	204.3
0.00- 0.10	198	10.3	58	3.2	2	0.1	0	0.0	1	0.1	138	7.1
0.11- 0.50	239	67.7	124	36.8	10	3.1	0	0.0	1	0.4	106	28.1
0.51- 1.00	92	71.6	59	46.8	4	3.0	2	1.4	0	0.0	29	22.2
1.01-10.00	206	727.0	168	596.4	16	56.4	1	5.5	0	0.0	28	91.9
10.01 +	65	3166.6	54	2446.7	5	206.4	2	431.0	2	406.5	8	256.9
REGION IX	800	4043.0	463	3129.7	37	268.8	5	437.9	4	407.0	309	406.0
0.00- 0.10	184	10.5	27	1.5	13	1.0	0	0.0	0	0.0	144	8.0
0.11- 0.50	226	59.3	75	20.7	51	15.5	0	0.0	0	0.0	101	23.4
0.51- 1.00	71	55.1	26	19.8	21	16.7	0	0.0	0	0.0	26	20.2
1.01-10.00	135	441.4	62	197.9	53	205.0	0	0.0	0	0.0	31	82.3
10.01 +	22	672.6	10	336.3	11	394.3	0	0.0	0	0.0	2	67.0
REGION X	638	1238.7	200	576.0	149	632.5	0	0.0	0	0.0	304	200.8
0.00- 0.10	5,100	259.9	1,381	77.1	473	29.8	1	0.1	2	0.2	3,328	158.1
0.11- 0.50	5,412	1410.0	2,614	735.2	881	242.0	5	1.9	3	1.2	2,074	475.8
0.51- 1.00	1,621	1245.0	1,014	790.3	316	245.4	6	4.0	1	0.8	347	253.8
1.01-10.00	2,763	8978.1	2,019	6585.6	653	2306.8	12	57.3	11	35.4	266	696.5
10.01 +	535	23375.1	401	15339	98	5106.6	24	2911.0	10	1012.8	46	2978.3
ALL REGIONS	15,431	35267.8	7,429	23527	2,421	7930.4	48	2974.1	27	1050.2	6,061	4562.3

TABLE 48

DISTRIBUTION OF SLUDGE DISPOSAL METHODS BY DESIGN CAPACITY, WITHIN EPA REGION (YEAR 2000)

Table 48 summarizes the common groupings of sludge disposal methods expected to be used by treatment plants operating in the year 2000.

Information is provided for each EPA Region with a national total at the bottom of the table. The Regions are subdivided into five flow ranges, based on projected design capacity, so that the size of the plant, as well as the geographical location, can be related to the different sludge disposal methods.

The All Plants column gives the total number of each Region's plants that are projected to fall within the various flow ranges and the total projected design capacity represented by these plants.

The subsequent columns show which sludge disposal methods the plants are projected to use, listing the number of plants and the associated flow. The methods are listed under specific headings such as Land Fill or Ocean Dumping.

A single plant may be projected to use more than one sludge disposal method; therefore, the sum of the methods may exceed the total listed under All Plants. Entries are made in the Other column only if a plant does not qualify for any of the identified methods. There are over 9,400 facilities in the Other column. The majority of these are lagoon facilities which normally have no sludge disposal.

All flows are reported in million gallons per day.

DECEMBER 31, 1982
TABLE 48

1982 NEEDS SURVEY
DISTRIBUTION OF SLUDGE DISPOSAL METHODS BY DESIGN CAPACITY, WITHIN EPA REGION
(YEAR 2000)

EPA REGION & FLOW RANGE (MGD)	ALL PLANTS		LAND FILL		LAND APPLICATION		OCEAN DUMPING		COMPOSTING		OTHER	
	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW	# OF PLANTS	TOTAL FLOW
0.00- 0.10	187	10.2	77	4.4	10	0.5	0	0.0	1	0.1	103	5.6
0.11- 0.50	208	55.1	121	34.1	18	5.2	0	0.0	0	0.0	75	17.9
0.51- 1.00	71	50.5	55	39.1	5	4.3	0	0.0	1	0.7	11	7.3
1.01-10.00	210	691.6	177	596.6	28	77.9	0	0.0	12	47.9	17	44.5
10.01 +	50	1678.7	49	1278.7	0	0.0	0	0.0	2	22.9	1	400.0
REGION I	726	2486.0	479	1952.6	61	87.8	0	0.0	16	71.4	207	475.2
0.00- 0.10	267	14.4	93	5.4	4	0.3	0	0.0	0	0.0	171	8.9
0.11- 0.50	324	81.1	219	61.7	6	1.9	0	0.0	0	0.0	101	18.2
0.51- 1.00	118	89.6	113	85.5	2	1.7	1	1.0	0	0.0	2	1.5
1.01-10.00	263	960.2	242	873.5	6	19.4	9	35.1	5	36.4	8	38.9
10.01 +	82	4344.7	61	2155.6	1	24.8	1	31.1	2	100.0	19	2113.4
REGION II	1,054	5489.8	728	3181.5	19	47.9	11	67.0	7	136.4	301	2180.7
0.00- 0.10	803	44.0	332	18.3	15	1.1	0	0.0	0	0.0	463	25.1
0.11- 0.50	896	228.7	596	169.5	46	13.1	0	0.0	0	0.0	264	48.8
0.51- 1.00	239	176.4	215	157.1	24	19.0	0	0.0	0	0.0	5	3.9
1.01-10.00	351	1056.1	312	921.5	50	171.1	1	2.8	4	8.6	6	17.4
10.01 +	62	2869.0	45	1731.3	16	698.2	0	0.0	6	620.8	2	245.0
REGION III	2,351	4373.9	1,500	2997.4	151	902.2	1	2.8	10	629.4	740	340.1
0.00- 0.10	1,077	51.2	557	27.6	23	1.4	0	0.0	0	0.0	499	22.4
0.11- 0.50	1,014	248.0	577	146.5	69	19.3	1	0.4	0	0.0	378	85.1
0.51- 1.00	308	229.0	213	158.3	42	32.3	0	0.0	0	0.0	66	48.4
1.01-10.00	655	2277.8	532	1863.7	112	439.6	0	0.0	2	12.0	38	72.2
10.01 +	126	3967.2	110	3276.9	19	399.7	0	0.0	2	63.0	7	508.1
REGION IV	3,180	6773.1	1,989	5472.8	265	892.1	1	0.4	4	75.0	988	727.9
0.00- 0.10	1,418	79.1	299	17.3	270	16.3	0	0.0	0	0.0	876	47.5
0.11- 0.50	1,369	333.8	405	105.8	441	117.9	0	0.0	2	0.6	568	122.6
0.51- 1.00	351	256.4	157	117.7	154	111.7	0	0.0	0	0.0	58	40.4
1.01-10.00	586	1822.2	322	965.6	297	1001.1	0	0.0	0	0.0	24	48.5
10.01 +	140	7702.6	93	4857.8	53	3314.0	0	0.0	0	0.0	4	1119.0
REGION V	3,864	10193.9	1,276	6063.8	1,215	4560.9	0	0.0	2	0.6	1,530	1377.8
0.00- 0.10	1,797	84.7	589	30.2	103	5.4	0	0.0	1	0.1	1,202	54.3
0.11- 0.50	1,198	289.7	759	194.9	104	26.6	0	0.0	0	0.0	428	91.8
0.51- 1.00	356	265.6	296	221.5	38	28.4	0	0.0	0	0.0	53	39.0
1.01-10.00	475	1441.7	408	1276.2	85	274.2	0	0.0	4	21.8	41	95.0
10.01 +	67	2140.7	57	1855.9	21	856.0	0	0.0	2	54.8	4	68.0
REGION VI	3,893	4222.2	2,109	3578.5	351	1190.3	0	0.0	7	76.7	1,728	347.9
0.00- 0.10	1,445	65.6	103	6.3	108	6.4	0	0.0	0	0.0	1,250	53.9
0.11- 0.50	687	160.8	192	48.0	173	45.9	0	0.0	0	0.0	346	72.5
0.51- 1.00	143	102.3	63	45.7	61	45.6	0	0.0	1	0.8	29	19.3
1.01-10.00	186	561.5	116	375.9	81	228.1	0	0.0	2	2.8	18	43.1
10.01 +	32	1139.8	26	945.6	6	151.0	0	0.0	0	0.0	3	104.2
REGION VII	2,493	2029.8	500	1421.3	429	476.8	0	0.0	3	3.6	1,646	292.7
0.00- 0.10	771	31.0	18	0.9	14	0.8	0	0.0	0	0.0	740	29.5
0.11- 0.50	338	76.8	27	7.0	25	6.9	0	0.0	0	0.0	287	63.5
0.51- 1.00	69	49.7	17	12.9	10	7.6	0	0.0	0	0.0	42	29.4
1.01-10.00	137	411.2	59	178.8	44	157.9	0	0.0	1	8.0	38	92.5
10.01 +	19	664.0	12	336.6	5	276.2	0	0.0	0	0.0	2	51.2
REGION VIII	1,334	1232.5	133	535.9	98	449.2	0	0.0	1	8.0	1,109	266.0
0.00- 0.10	421	22.4	52	3.0	2	0.1	0	0.0	1	0.1	367	19.4
0.11- 0.50	371	90.5	130	37.9	7	2.0	0	0.0	0	0.0	235	50.9
0.51- 1.00	127	94.8	72	54.5	7	4.5	2	1.5	0	0.0	46	34.4
1.01-10.00	245	859.8	196	698.1	19	74.9	0	0.0	4	21.1	40	129.6
10.01 +	69	3323.4	59	2978.3	6	290.3	2	24.0	6	514.2	7	289.5
RFGION IX	1,233	4390.7	509	3771.5	41	371.6	4	25.5	11	535.3	695	523.7
0.00- 0.10	344	17.9	35	2.1	16	1.2	0	0.0	0	0.0	293	14.6
0.11- 0.50	298	74.8	96	26.3	69	20.3	0	0.0	0	0.0	136	29.2
0.51- 1.00	78	58.4	25	17.9	27	19.4	0	0.0	0	0.0	29	23.1
1.01-10.00	152	508.3	73	236.8	60	222.8	0	0.0	0	0.0	30	90.6
10.01 +	27	887.0	12	460.5	15	510.2	0	0.0	0	0.0	2	103.0
REGION X	899	1546.1	241	743.5	187	773.8	0	0.0	0	0.0	490	260.4
0.00- 0.10	8,530	420.1	2,155	115.1	565	33.1	0	0.0	3	0.2	5,964	280.9
0.11- 0.50	6,703	1638.8	3,122	831.2	958	258.6	1	0.4	2	0.6	2,818	600.0
0.51- 1.00	1,860	1372.3	1,226	909.6	370	274.1	3	2.4	2	1.4	341	246.3
1.01-10.00	3,260	10589.9	2,437	7986.1	782	2666.5	10	37.8	34	158.3	260	671.7
10.01 +	674	28716.6	524	19877	142	6520.0	3	75.1	20	1375.7	51	4993.3
ALL REGIONS	21,027	42737.5	9,464	29718	2,817	9752.2	17	115.6	61	1536.1	9,434	6792.0

CHAPTER III

SUMMARIES OF CONVEYANCE SYSTEMS TECHNICAL DATA (CATEGORIES IIIA, IIIB, IVA, IVB)

Technical data on the municipal sewage conveyance facilities which will be required to be constructed by the year 2000 were compiled in the course of the 1982 Needs Survey. The data were collected using the EPA-1 form which is described in detail in Appendix C.

The technical data for each conveyance facility were collected at the same time as the dollar needs. The data were obtained from several sources including the 1980 Needs Survey files, EPA construction grant files, and various engineering plans and reports. A further description of the sources and methods used in collecting data for the 1982 Needs Survey is presented in Appendix A.

The technical data collected for all conveyance facilities have been compiled and are presented in the 12 tables which follow. These technical tables include a discussion of each table presented immediately before the table.

TABLE 49

COLLECTION POPULATIONS
PRESENT, PROJECTED, RESIDENT AND NONRESIDENT

Table 49 summarizes the populations by State for 1980 and 2000 which are now or will be receiving collection of their wastewaters.

The values listed for the year 2000 Ceiling Population were obtained from data provided by the Department of Commerce, Bureau of Economic Analysis (BEA). The projections were produced by BEA after extensive analysis which included review and comment by State agencies responsible for population projections.

Resident populations (RES) are permanent residents within the service area of an established sewerage authority. Nonresident populations (NONRES) include transients, seasonal workers, commuters, tourists, and other persons who must be served by local systems but do not maintain a permanent residence within the service area.

A person is included in the Receiving Collection category if their residence is connected to a central collection system operated by an established sewerage authority. A person is included in the Not Receiving Collection category if they reside in the service area of an established sewerage authority but their residence is not connected to a central collection system. The sum of the populations receiving collection and not receiving collection do not equal the State's total population. This is because many rural residents, who are counted as a part of the State's total population, do not reside in the service area of any established sewerage authority and, therefore, are not included in any Receiving Collection or Not Receiving Collection categories.

The Percent Served values are based upon a comparison between the resident population receiving collection and the State population ceiling figures provided by the Bureau of Census.

DECEMBER 31, 1982
TABLE 49

1982 NEEDS SURVEY

COLLECTION POPULATIONS
PRESENT, PROJECTED, RESIDENT & NONRESIDENT
(IN THOUSANDS)

STATE	2000 CEILING POPULATION	****** RECEIVING COLLECTION ***** 1980 RES.	2000 RES.	1980 NONRES.	2000 NONRES.	*** NOT RECEIVING COLLECTION *** 1980 RES.	2000 RES.	1980 NONRES.	2000 NONRES.	PERCENT SERVED 1980	2000
ALABAMA	4,140	2,125	3,525	103	233	530	88	10	0	54.6	85.2
*ALASKA	694	218	666	3	19	186	27	3	0	54.5	96.1
*ARIZONA	4,357	2,220	4,320	68	181	305	93	11	4	81.7	99.2
ARKANSAS	2,970	1,296	2,514	34	46	205	33	0	0	56.7	84.7
CALIFORNIA	26,786	19,425	26,238	1,079	1,483	1,559	264	44	10	82.1	98.0
COLORADO	4,371	2,752	4,231	191	577	36	2	0	0	95.3	96.8
*CONNECTICUT	3,902	1,919	3,029	31	51	1,213	872	0	0	61.7	77.6
*DELAWARE	841	491	819	107	432	86	23	34	0	82.5	97.5
*DIST. OF COLUM.	694	744	913	729	694	0	0	0	0	116.6	131.6
FLORIDA	15,049	5,821	13,317	901	1,696	1,869	560	11	3	59.8	88.5
GEORGIA	7,053	3,266	6,052	139	234	755	323	3	0	59.8	85.8
HAWAII	1,366	597	1,240	87	240	205	0	11	0	62.0	90.8
IDAHO	1,183	503	1,068	13	81	122	20	24	4	53.4	90.3
ILLINOIS	12,358	9,844	12,099	34	42	287	90	0	0	86.2	97.9
INDIANA	6,059	3,554	4,946	246	503	342	40	65	0	64.7	81.6
IOWA	3,101	2,106	2,832	77	129	158	24	20	0	72.3	91.4
KANSAS	2,642	1,847	2,635	16	21	174	6	0	0	78.2	99.7
KENTUCKY	4,224	1,818	3,192	60	97	655	257	0	0	49.7	75.6
*LOUISIANA	4,880	2,857	4,880	93	106	671	4	8	0	68.0	100.0
MAINE	1,222	577	935	85	128	339	244	4	3	51.3	76.6
MARYLAND	5,583	3,346	5,274	144	460	532	159	138	118	79.4	94.5
MASSACHUSETTS	6,736	4,063	5,772	65	201	1,530	963	80	56	70.8	85.7
MICHIGAN	10,314	7,052	8,780	186	234	1,313	892	41	45	76.2	85.1
MINNESOTA	4,505	3,011	3,811	25	36	218	121	7	6	73.9	84.6
MISSISSIPPI	2,740	1,494	2,401	12	27	382	129	1	0	59.3	87.6
*MISSOURI	5,379	3,636	5,357	886	1,209	319	21	9	0	73.9	99.6
MONTANA	938	474	709	33	38	33	1	0	0	60.3	75.7
NEBRASKA	1,734	1,251	1,712	17	26	47	7	0	0	79.7	98.7
NEVADA	1,408	735	1,373	92	145	53	4	0	0	92.1	97.6
NEW HAMPSHIRE	1,306	442	934	57	191	335	268	63	43	48.1	71.6
NEW JERSEY	9,022	6,043	8,326	964	1,536	1,217	695	130	55	82.1	92.3
NEW MEXICO	1,781	915	1,546	23	36	132	47	6	2	70.4	86.8
*NEW YORK	19,683	13,410	17,410	2,763	4,044	4,415	2,273	61	24	76.3	88.5
NORTH CAROLINA	7,419	2,547	4,588	193	453	1,486	908	103	27	43.4	61.9
NORTH DAKOTA	690	441	578	0	1	7	3	0	0	67.5	83.8
*OHIO	12,237	8,666	12,102	57	104	986	134	13	0	80.3	98.9
OKLAHOMA	3,702	1,865	3,297	2	12	197	44	7	0	61.7	89.1
OREGON	3,209	1,452	3,056	42	81	342	11	3	0	55.1	95.2
PENNSYLVANIA	12,854	9,216	12,287	524	1,202	2,282	565	241	21	77.7	95.6
RHODE ISLAND	1,084	627	920	48	71	324	162	0	0	66.3	84.9
SOUTH CAROLINA	3,700	1,408	2,887	279	516	673	118	55	0	45.2	78.0
SOUTH DAKOTA	730	459	668	14	11	16	6	0	0	66.7	91.5
TENNESSEE	5,573	2,195	4,139	72	145	904	282	1	0	47.8	74.3
TEXAS	21,000	12,108	20,187	236	543	1,098	12	41	4	85.1	96.1
UTAH	1,963	1,219	1,949	192	327	78	3	1	0	83.5	99.3
VERMONT	607	234	370	46	77	116	85	15	8	45.8	61.0
VIRGINIA	6,755	3,353	5,935	138	265	1,210	548	2	0	62.7	87.9
WASHINGTON	4,859	2,375	4,360	440	811	631	123	28	21	57.5	89.7
*WEST VIRGINIA	2,101	901	2,071	16	24	883	30	2	0	46.2	98.6
WISCONSIN	5,553	3,326	4,820	105	196	421	192	21	14	70.7	86.8
*WYOMING	484	333	619	18	28	3	0	1	0	74.0	128.1
AMERICAN SAMOA	40	1	32	0	1	27	2	0	0	4.2	80.5
GUAM	275	71	209	9	3	26	15	0	0	64.8	76.0
N. MARIANAS	33	1	31	0	2	17	1	0	0	8.1	94.1
PUERTO RICO	4,700	1,824	3,242	0	0	1,117	771	0	0	57.1	69.0
*PAC. TR. TERR.	183	11	103	0	4	100	79	0	0	9.5	56.8
*VIRGIN ISLANDS	116	79	128	3	3	29	7	0	0	80.6	110.6
U.S. TOTALS	278,888	164,598	251,463	11,746	20,881	33,145	12,683	1,344	477	71.5	98.2

TABLE 50

TOTAL PIPE LENGTH NEEDED, BY DIAMETER

Table 50 summarizes the total length of sewer pipe in meters required by the year 2000. These figures include gravity sewer pipe and force main pipe lengths.

The lengths are separated into two categories, which are shown in the table as Type 1 and Type 2 Estimates, and five diameter ranges for each category. Type 1 information was obtained from preliminary engineering designs. Type 2 information was generally developed using EPA cost estimating procedures. The diameter sizes are in centimeters (inches are shown in parentheses).

Dollar needs by category and size range are summarized in Table 52.

DECEMBER 31, 1982
TABLE 50

1982 NEEDS SURVEY
TOTAL PIPE LENGTH NEEDED, BY DIAMETER
(LENGTH IN METERS, DIAMETER IN CENTIMETERS)

STATE	TYPE 1 ESTIMATES 0-47 (0"-18")	48-68 (19"-27")	69-123 (28"-48")	124-199 (49"-78")	200+ (79"+)	TYPE 2 ESTIMATES 0-47 (0"-18")	48-68 (19"-27")	69-123 (28"-48")	124-199 (49"-78")	200+ (79"+)
ALABAMA	1,668,298	85,115	67,822	56,211		2,014,686	9,741	5,532		
ALASKA	137,761	15,508	4,147	3,987		276,271				
ARIZONA	291,830	75,938	98,438	15,452		1,087,521	15,104	10,430		
ARKANSAS	538,731	57,906	27,729	8,717		1,027,488	13,478	5,264		
CALIFORNIA	881,905	92,490	151,790	80,195	39,276	5,743,434	149,160	149,849	12,987	5,396
COLORADO	18,522	18,037	28,498	48,938		321,923	31,568	16,222	6,433	
CONNECTICUT	997,043	53,917	37,166			2,075,887	29,404	9,644		
DELAWARE	198,728	5,228				146,208	2,271	7,167	2,695	
DIST. OF COLUM.										
FLORIDA	2,212,285	578,967	853,256	79,785	24,620	5,605,821	48,849	16,812	12,147	
GEORGIA	946,625	282,776	221,141	87,676	10,503	2,526,196	7,972	16,741		
HAWAII	125,684	17,693	23,872			580,247	15,931	1,523		
'DAHO	292,143	11,898	5,333			673,162	14,648	6,844		
ILLINOIS	1,273,876	98,496	104,599	11,987		733,482	32,385	9,778		
INDIANA	1,001,431	71,905	40,128			1,085,198	11,085	1,078		
IOWA	461,530	76,896	59,933	7,315	6,126	858,498	23,288	21,252	12,344	
KANSAS	559,728	130,080	55,643			597,886	88,611	29,617		
KENTUCKY	2,179,413	91,145	150,383	44,439		1,492,365	2,382			
LOUISIANA	2,700,490	218,874	85,069	3,826		1,192,522	23,794	17,675		
MAINE	866,813	7,126	3,657			756,615	3,123			
MARYLAND	461,660	27,226	70,167			1,078,912	39,597	77,782	27,443	
MASSACHUSETTS	2,925,630	380,829	102,957	100,055	1,478	1,448,980	34,682	27,049		
MICHIGAN	1,935,557	49,554	48,362	114,093	11,667	1,638,681	29,141	22,864	4,571	
MINNESOTA	603,296	40,768	35,356	22,677	31,394	765,627	18,775	2,147		
MISSISSIPPI	1,269,414	77,149	153,995			788,486	17,178			
MISSOURI	1,650,744	104,378	146,504	73,290		968,855	4,927		4,829	
MONTANA	351,613	7,619	9,985			92,558				
NEBRASKA	36,116	24,002	37,843	8,991		273,262	5,161	19,171		
NEVADA	29,276	5,547	6,231	2,569		241,331	5,643	13,380		
NEW HAMPSHIRE	1,147,473	87,943	18,568			1,316,752	20,076			
NEW JERSEY	1,122,285	137,645	142,903	31,828	21,322	1,763,948	31,283			
NEW MEXICO	209,199	21,088	39,786	1,042		360,901	877	1,899		
NEW YORK	2,320,840	89,415	118,065	56,900	688	5,654,944	72,071	72,653	21,616	
NORTH CAROLINA	3,470,264	361,641	284,354	46,756		2,930,698	2,241	11,675		
NORTH DAKOTA	81,095	2,956				24,877	1,152			
OHIO	2,235,721	167,196	365,294	141,860	4,831	2,192,426	37,323	16,888		
OKLAHOMA	795,464	36,624	68,253	12,809		847,624	7,241	4,804		
OREGON	306,509	62,198	30,553			936,472	30,777	10,656	42,148	
PENNSYLVANIA	1,426,907	50,224	9,866			8,341,711	66,474	22,986	3,188	
RHODE ISLAND	538,189	18,579	20,909			446,837	41,779			
SOUTH CAROLINA	1,790,993	206,153	108,299			2,627,972	44,506			
SOUTH DAKOTA	103,347	19,177	12,191			38,337				
TENNESSEE	2,708,349	240,267	104,898	23,439	20,253	2,212,857	10,998			
TEXAS	1,732,150	201,871	318,935	223,704	38,673	9,242,945	243,168	106,419	16,306	
UTAH	265,078	18,135	14,325	5,181		509,401	10,621	7,474	4,262	
VERMONT	300,271	4,459				217,016	9,605			
VIRGINIA	1,400,121	139,658	173,251	16,001		2,709,676	43,045	24,590		
WASHINGTON	734,634	202,567	158,833	35,600		2,367,181	122,751	52,193	21,823	
WEST VIRGINIA	2,057,593	16,550				3,001,466	5,524			
WISCONSIN	887,415	31,044	168,054			1,435,878	38,632	22,098		
WYOMING	84,659	3,241	24,181			18,112		1,828		
AMERICAN SAMOA	49,615		77,504							
GUAM	78,023	1,447								
N. MARIANAS	69,189					98,638				
PUERTO RICO	1,023,289	248,579	249,078	8,606		564,073		36,885		
PAC. TR. TERR.	139,464					34,286				
VIRGIN ISLANDS	1,021	2,881				136,973	7,548	8,887		
U.S. TOTALS	54,183,327	5,077,825	4,838,189	1,373,781	210,838	86,108,438	1,517,607	888,644	192,792	5,396

NOTE: 1. PIPE CATEGORIES ARE DIAMETER IN CENTIMETERS (INCHES IN PARATHESES).

TABLE 51

LENGTH AND COST OF PIPE NEEDED BY THE YEAR 2000

Table 51 summarizes the total length in kilometers of collector sewer (CS) pipe, interceptor sewer (IS) pipe, and force main (FM) pipe required by the year 2000. Also summarized is the mean cost in dollars per meter for each type of pipe. The mean cost for interceptor pipe has been subdivided into three diameter ranges. These are 0 to 68 centimeters (27 inches), 69 to 123 centimeters (48 inches), and 124 centimeters (49 inches) and larger.

The data have been separated into two general categories which are shown in the table as Type 1 and Type 2 estimates. Type 1 information was obtained from preliminary engineering designs. Type 2 information was generally developed using EPA cost estimating procedures.

All costs are in January 1982 dollars.

DECEMBER 31, 1982
TABLE 51

1982 NEEDS SURVEY
LENGTH AND COST OF PIPE NEEDED BY THE YEAR 2000
(LENGTH IN KILOMETERS, MEAN COST IN DOLLARS/METER)

STATE	TYPE 1 ESTIMATES								TYPE 2 ESTIMATES							
	LENGTH			MEAN COST					LENGTH			MEAN COST				
	CS.	IS.	FM.	CS.	IS.			FM.	CS.	IS.	FM.	CS.	IS.			FM.
					0-68 (27")	69-123 (48")	124+ (49"+)						0-68 (27")	69-123 (48")	124+ (49"+)	
ALABAMA	679	987	290	112	149	275	987	92	1,873	156	0	147	170	443	0	0
ALASKA	44	113	3	193	544	1967	5338	302	221	55	0	407	509	0	0	0
ARIZONA	112	352	17	110	127	747	703	97	946	166	0	185	173	452	0	179
ARKANSAS	227	285	120	89	189	610	639	84	806	240	0	131	137	419	0	0
CALIFORNIA	474	663	107	182	233	671	1931	259	5,173	885	4	270	279	683	4426	298
COLORADO	0	110	3	0	317	638	1463	259	185	190	0	155	192	388	934	0
CONNECTICUT	675	318	94	253	359	778	0	555	2,015	97	2	254	369	617	0	248
DELAWARE	109	19	66	141	383	0	0	103	136	21	0	179	248	477	956	0
DIST. OF COLUM.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FLORIDA	61	1,484	1,902	118	280	457	1609	159	5.432	251	0	223	190	439	926	0
GEORGIA	175	1,177	196	106	148	447	539	167	2,299	247	3	132	135	388	0	68
HAWAII	77	68	21	666	954	1414	0	658	539	49	0	430	517	0	0	1390
IDAHO	155	118	36	126	214	889	0	123	552	141	0	159	173	416	0	0
ILLINOIS	805	523	160	116	278	1081	2061	133	558	202	14	285	306	739	0	259
INDIANA	567	305	241	133	211	832	0	74	893	200	3	239	246	538	0	96
IOWA	251	273	86	98	257	696	1747	73	650	250	14	149	219	504	1397	74
KANSAS	253	426	66	147	305	640	0	127	393	314	0	229	377	1022	0	0
KENTUCKY	914	1,155	403	144	193	671	1975	92	1.308	168	17	261	165	0	0	35
LOUISIANA	1,590	544	873	112	192	490	1752	80	1.056	177	0	198	283	461	0	0
MAINE	487	231	158	204	290	509	0	147	683	59	17	179	179	0	0	123
MARYLAND	332	173	52	275	254	1014	0	51	886	293	36	193	269	610	1029	1549
MASSACHUSETTS	2,322	921	267	260	367	1091	1355	141	1.338	139	32	201	278	478	0	205
MICHIGAN	1,330	561	267	195	280	519	3539	112	1.512	177	5	212	251	541	1037	94
MINNESOTA	209	199	324	132	229	779	2458	98	653	112	20	188	212	425	0	109
MISSISSIPPI	544	636	319	99	137	325	0	68	584	213	7	137	131	0	0	127
MISSOURI	489	1,089	396	129	204	938	1825	235	755	188	25	243	213	0	1023	132
MONTANA	183	144	41	152	152	338	0	94	58	33	0	139	144	0	0	0
NEBRASKA	5	96	25	79	295	455	1055	58	181	114	1	149	167	327	0	169
NEVADA	9	34	0	195	354	909	779	0	208	51	0	213	221	449	0	0
NEW HAMPSHIRE	585	517	143	227	290	285	0	186	925	314	97	191	218	0	0	176
NEW JERSEY	641	509	304	253	1067	759	6221	463	1,708	83	2	237	437	0	0	114
NEW MEXICO	120	148	1	79	192	431	688	348	285	78	0	130	137	360	0	0
NEW YORK	1,659	697	228	451	407	1046	4628	263	4,956	734	110	380	272	733	1507	148
NORTH CAROLINA	1,107	2,310	744	115	140	401	568	113	2,779	165	0	135	106	286	0	0
NORTH DAKOTA	37	9	37	70	116	0	0	76	0	19	6	170	135	0	0	222
OHIO	1,472	1,223	219	188	336	569	1221	179	1,937	304	4	268	232	686	0	71
OKLAHOMA	378	444	89	63	129	387	229	130	684	174	1	133	133	336	0	24
OREGON	165	205	28	141	273	858	0	143	773	235	10	439	331	592	947	275
PENNSYLVANIA	1,000	345	141	194	258	690	0	150	7.255	1.158	20	195	268	786	3692	320
RHODE ISLAND	417	129	22	198	335	397	0	198	430	56	0	192	334	0	0	244
SOUTH CAROLINA	180	1,395	528	137	130	282	0	77	2.367	266	38	140	210	0	0	129
SOUTH DAKOTA	16	76	41	105	231	522	0	53	11	27	0	133	129	0	0	0
TENNESSEE	785	1,724	579	135	171	562	962	116	2,058	155	9	187	237	0	0	98
TEXAS	651	1,522	341	75	160	467	1037	112	5,959	3.645	3	90	164	383	586	240
UTAH	98	160	43	96	97	585	1463	39	392	139	0	148	173	465	742	0
VERMONT	226	39	38	182	278	0	0	141	193	30	2	181	254	0	0	180
VIRGINIA	695	634	398	139	166	486	978	200	2.317	326	133	173	158	415	0	59
WASHINGTON	244	774	112	532	373	794	414	242	2.181	455	6	261	308	1139	2319	115
WEST VIRGINIA	1,946	541	386	152	235	0	0	85	2.687	319	0	164	179	0	0	0
WISCONSIN	213	460	112	156	255	2715	0	129	1,276	218	1	199	217	547	0	252
WYOMING	26	80	5	91	157	482	0	76	4	14	0	128	128	250	0	0
AMERICAN SAMOA	49	77	0	131	0	345	0	0	0	0	0	0	0	0	0	0
GUAM	51	3	15	138	395	0	0	198	0	0	0	0	0	0	0	0
N. MARIANAS	0	69	0	0	252	0	0	0	97	1	0	226	421	0	0	0
PUERTO RICO	637	685	206	198	178	380	1931	173	550	41	0	434	446	1065	0	0
PAC. TR. TERR.	90	33	16	195	306	0	0	226	31	2	0	215	215	0	0	0
VIRGIN ISLANDS	0	1	2	0	793	0	0	863	126	27	0	146	548	672	0	0
U.S. TOTALS	26,590	27,757	11,335	186	233	681	1727	144	73.828	14.218	666	209	217	620	1571	231

NOTES: 1. PIPE CATEGORIES ARE COLLECTOR (CS.). INTERCEPTOR (IS.), AND FORCE MAIN (FM.).

2. INTERCEPTOR PIPE CATEGORIES ARE DIAMETER IN CENTIMETERS (MAXIMUM INCHES IN PARATHESES).

TABLE 52

DOLLAR NEEDS FOR ALL PIPE SIZE CATEGORIES, BY DIAMETER

Table 52 summarizes the total dollar needs for all pipe required by the year 2000. Dollar needs are included for gravity sewer pipe and force main pipe. Where Table 51 provided dollar needs by pipe category (collector sewer, interceptor sewer, etc.), Table 52 provides dollar needs by size range for all pipe categories. Table 52 is an extension of Table 50.

The dollar needs are separated into two parts, which are shown in the table as Type 1 and Type 2 Estimates, and five diameter ranges for each part. Type 1 information was obtained from preliminary engineering designs. Type 2 information was generally developed using EPA cost estimating procedures. The diameter sizes are in centimeters (inches are shown in parentheses).

It is noted that about 75 percent of the dollar needs are for pipes with a diameter less than or equal to 47 centimeters (18 inches).

DECEMBER 31, 1982
TABLE 52

1982 NEEDS SURVEY
DOLLAR NEEDS FOR ALL PIPE SIZE CATEGORIES, BY DIAMETER
(THOUSANDS OF 1982 DOLLARS)

STATE	TYPE 1 ESTIMATES					TYPE 2 ESTIMATES				
	0-47 (0"-18")	48-68 (19"-27")	69-123 (28"-48")	124-199 (49"-78")	200+ (79"+)	0-47 (0"-18")	48-68 (19"-27")	69-123 (28"-48")	124-199 (49"-78")	200+ (79"+)
ALABAMA	186,868	21,861	18,738	55,137		299,904	3,014	2,456		
ALASKA	53,682	13,226	8,160	20,860		118,163				
ARIZONA	32,395	12,003	73,552	10,870		197,762	5,157	4,719		
ARKANSAS	63,912	12,788	13,535	5,576		134,465	3,535	2,207		
CALIFORNIA	162,138	38,079	97,631	112,941	117,843	1,536,013	62,563	101,807	80,159	1,216
COLORADO	3,275	8,104	18,184	71,645		52,123	9,106	6,301	6,089	
CONNECTICUT	272,476	26,392	52,820			531,495	14,593	5,960		
DELAWARE	25,715	4,174				26,401	1,045	3,424	2,579	
DIST. OF COLUM.										
FLORIDA	322,266	204,781	210,159	146,502	21,369	1,240,931	13,382	7,394	11,268	
GEORGIA	123,982	53,572	97,419	31,768	8,115	334,472	1,912	6,364		
HAWAII	88,046	21,120	31,639			257,033	8,852	4,021		
IDAHO	42,630	5,678	4,747			107,064	4,624	2,728		
ILLINOIS	182,498	45,761	113,034	24,706		160,223	17,575	7,230		
INDIANA	135,169	14,300	33,411			258,680	4,614	581		
IOWA	54,371	28,409	41,757	5,068	18,416	134,808	11,350	10,717	17,249	
KANSAS	108,314	50,352	35,662			152,828	44,744	30,276		
KENTUCKY	305,900	45,096	107,103	87,799		370,032	663			
LOUISIANA	279,450	46,490	47,384	6,704		233,349	8,511	8,149		
MAINE	184,321	2,636	1,865			134,046	1,020			
MARYLAND	107,925	12,818	71,157			213,547	17,250	50,792	58,302	
MASSACHUSETTS	720,479	184,785	109,321	133,440	4,149	295,415	12,864	12,953		
MICHIGAN	383,285	14,395	25,573	255,828	189,355	347,896	12,222	12,371	4,744	
MINNESOTA	66,200	16,190	27,574	22,416	110,081	142,522	6,677	914		
MISSISSIPPI	121,945	18,604	50,108			105,924	3,551			
MISSOURI	252,200	37,017	137,904	123,597		225,276	1,503		4,945	
MONTANA	50,041	2,456	3,379			13,087				
NEBRASKA	7,774	8,842	17,235	9,489		41,703	1,737	6,270		
NEVADA	8,185	2,708	5,669	2,004		51,108	1,969	5,996		
NEW HAMPSHIRE	261,927	45,317	3,016			256,399	6,636			
NEW JERSEY	556,593	71,491	117,840	52,569	164,342	429,273	13,726			
NEW MEXICO	24,552	6,327	17,130	718		47,619	169	684		
NEW YORK	957,955	53,113	131,528	252,758	13,814	2,046,683	34,350	53,259	32,580	
NORTH CAROLINA	387,090	87,253	116,402	26,563		391,737	375	3,347		
NORTH DAKOTA	5,916	647				3,889	387			
OHIO	491,609	65,765	206,355	162,389	16,935	572,696	14,202	10,240		
OKLAHOMA	70,690	10,943	26,172	2,942		112,380	1,759	1,615		
OREGON	48,643	25,983	25,553			398,029	13,414	6,317	39,942	
PENNSYLVANIA	281,815	20,911	5,922			1,691,214	33,870	14,674	11,776	
RHODE ISLAND	117,131	6,756	8,314			86,892	15,112			
SOUTH CAROLINA	185,025	43,181	32,657			363,546	30,236			
SOUTH DAKOTA	11,239	7,606	6,375			5,007				
TENNESSEE	364,727	70,579	57,703	13,500	28,571	409,648	14,689			
TEXAS	167,319	63,606	151,305	195,915	74,606	1,038,121	78,567	40,377	8,256	
UTAH	20,644	4,334	8,391	7,581		77,201	3,195	3,476	3,163	
VERMONT	56,161	1,617				38,865	4,230			
VIRGINIA	194,473	32,554	77,467	9,177		445,477	11,963	10,226		
WASHINGTON	264,368	109,738	126,188	14,753		614,139	54,545	59,469	50,623	
WEST VIRGINIA	435,359	5,691				496,948	2,071			
WISCONSIN	106,116	16,522	456,373			287,707	10,181	12,098		
WYOMING	10,064	1,599	11,670			2,292		459		
AMERICAN SAMOA	6,517		26,801							
GUAM	11,343	482								
N. MARIANAS	17,449					22,598				
PUERTO RICO	192,585	46,483	94,770	16,624		245,383		38,462		
PAC. TR. TERR.	31,459					7,381				
VIRGIN ISLANDS	810	1,797				23,184	5,418	5,980		
U.S. TOTALS	9,627,021	1,792,852	3,161,852	1,881,759	767,596	17,822,498	623,128	594,313	331,587	1,216

NOTE: 1. PIPE CATEGORIES ARE DIAMETER IN CENTIMETERS (INCHES IN PARATHESES).

TABLE 53

NUMBER, CAPACITY, AND COST OF NEW PUMP STATIONS

Table 53 summarizes the pump station requirements for the year 2000. The summary presents the number of pump stations required and the total average daily pumping capacity in thousand cubic meters per day. Also summarized are the total dollar needs and the mean cost per pump station in January 1982 dollars.

The data have been separated into two general categories which are shown in the table as Type 1 and Type 2 Estimates. Type 1 information was obtained from preliminary engineering designs. Type 2 information was generally developed using EPA cost estimating procedures.

DECEMBER 31, 1982
TABLE 53

1982 NEEDS SURVEY
NUMBER, CAPACITY AND COST OF NEW PUMP STATIONS
(THOUSANDS OF 1982 DOLLARS)

	============ TYPE 1 ESTIMATES ============				============ TYPE 2 ESTIMATES ============			
STATE	NUMBER OF STATIONS	TOTAL CAPACITY (KCMD)	TOTAL COST	MEAN COST	NUMBER OF STATIONS	TOTAL CAPACITY (KCMD)	TOTAL COST	MEAN COST
ALABAMA	429	1,151	27,510	64	0	0	0	0
ALASKA	13	61	1,264	97	0	0	0	0
ARIZONA	18	41	1,579	87	7	9	708	101
ARKANSAS	144	185	14,730	102	0	0	0	0
CALIFORNIA	147	3,384	73,875	502	28	159	9,834	351
COLORADO	0	0	0	0	0	0	0	0
CONNECTICUT	116	840	39,949	344	51	118	7,506	147
DELAWARE	192	54	13,924	72	2	7	969	484
DIST. OF COLUM.	0	0	0	0	0	0	0	0
FLORIDA	1,848	10,754	383,833	207	6	10	452	75
GEORGIA	129	954	38,144	295	8	299	2,909	363
HAWAII	19	79	18,430	970	0	0	0	0
IDAHO	129	60	3,512	27	0	0	0	0
ILLINOIS	206	357	21,622	104	17	110	4,478	263
INDIANA	313	164	21,420	68	3	1	433	144
IOWA	105	215	17,655	160	35	61	5,240	149
KANSAS	178	125	12,351	69	8	44	2,230	278
KENTUCKY	1,155	1,097	84,690	73	20	27	692	34
LOUISIANA	1,122	506	128,040	114	0	0	0	0
MAINE	236	343	32,228	136	35	11	2,605	74
MARYLAND	264	953	8,570	32	16	56	4,939	308
MASSACHUSETTS	389	1,599	137,987	354	32	129	9,851	307
MICHIGAN	626	534	36,191	57	9	1	987	109
MINNESOTA	619	316	17,950	28	221	2	1,162	5
MISSISSIPPI	364	543	20,415	56	2	52	820	410
MISSOURI	1,249	840	86,978	69	22	13	3,470	157
MONTANA	20	50	3,885	194	0	0	0	0
NEBRASKA	23	33	1,765	76	2	4	315	157
NEVADA	4	14	901	225	0	0	0	0
NEW HAMPSHIRE	157	276	38,255	243	114	61	15,440	135
NEW JERSEY	174	1,087	131,819	757	2	2	278	139
NEW MEXICO	13	71	2,533	194	0	0	0	0
NEW YORK	1,561	579	113,790	72	241	245	31,718	131
NORTH CAROLINA	753	1,343	61,195	81	3	7	227	75
NORTH DAKOTA	43	69	2,884	67	0	0	0	0
OHIO	1,425	650	50,548	35	7	13	692	98
OKLAHOMA	88	101	10,422	118	1	0	37	37
OREGON	38	74	5,311	139	39	45	14,224	364
PENNSYLVANIA	197	230	37,748	191	24	28	4,609	192
RHODE ISLAND	38	127	16,833	442	14	19	4,301	307
SOUTH CAROLINA	361	1,080	55,965	155	10	27	1,670	167
SOUTH DAKOTA	20	47	1,672	83	44	9	1,525	34
TENNESSEE	1,663	1,975	60,952	36	14	8	603	43
TEXAS	908	1,027	34,187	37	4	50	3,832	958
UTAH	17	33	1,252	73	0	0	0	0
VERMONT	66	22	10,104	153	8	6	516	64
VIRGINIA	324	1,022	61,996	191	139	19	6,217	44
WASHINGTON	120	158	31,191	259	30	697	91,943	3,064
WEST VIRGINIA	1,781	4,355	45,216	25	0	0	0	0
WISCONSIN	143	283	19,402	135	6	9	676	112
WYOMING	5	5	275	55	0	0	0	0
AMERICAN SAMOA	0	0	0	0	0	0	0	0
GUAM	27	15	2,883	106	0	0	0	0
N. MARIANAS	2	3	6,462	3,231	0	0	0	0
PUERTO RICO	272	313	70,698	259	7	17	2,678	382
PAC. TR. TERR.	93	20	7,645	82	0	0	0	0
VIRGIN ISLANDS	3	3	341	113	9	20	2,183	242
U.S. TOTALS	20,349	40,245	2,130,977	104	1,240	2,414	242,969	195

NOTE: 1. PUMP STATION CAPACITY IN THOUSANDS OF CUBIC METERS PER DAY (KCMD).

TABLE 54

NUMBER OF FACILITIES NEEDING COLLECTOR SEWERS BY SERVICE-AREA POPULATION AND PER-CAPITA COST

Table 54 summarizes for the nation the number of communities having collector sewer needs.

The summary is presented in matrix form. The matrix delineates the number of communities needing collectors by service area population and dollar needs per capita. The percentages listed represent the percent of the national total of communities needing collectors shown in each category. All costs are in January 1982 dollars.

The service area populations were based on the total 1980 resident population in a community. The population in a community meeting the qualifications of the "Two-Thirds Rule" was used to calculate the dollar per capita value. This rule states that two-thirds of the population requiring collector sewers in 1982 are required to have been residents of the service area on October 18, 1972 in order to be eligible for collector sewer funding from EPA.

The matrix also lists totals by service area and dollar needs per capita.

There are over 12,500 communities in the nation that need collector sewers. Communities with service area population less than 1,000 account for almost half of the national total. The most common per capita sewer cost is $701 to $800 per capita which represents 17.5 percent of the communities with collector sewer needs.

A related summary is presented on Table 55.

DECEMBER 31, 1982
TABLE 54

1982 NEEDS SURVEY
NUMBER OF FACILITIES NEEDING COLLECTOR SEWERS BY SERVICE-AREA POPULATION AND PER-CAPITA COST

COLLECTOR SEWER COST			****************************** SERVICE-AREA POPULATION ******************************											
	TOTAL		0-999		1,000-4,999		5,000-9,999		10,000-49,999		50K-100K		>100K	
$/CAPITA	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%
0-100	109	0.8	13	0.1	34	0.2	22	0.1	26	0.2	6	0.0	8	0.0
101-200	121	0.9	18	0.1	45	0.3	19	0.1	34	0.2	3	0.0	2	0.0
201-300	153	1.2	28	0.2	71	0.5	22	0.1	25	0.1	4	0.0	3	0.0
301-400	180	1.4	55	0.4	60	0.4	25	0.1	32	0.2	1	0.0	7	0.0
401-500	720	5.7	299	2.3	248	1.9	73	0.5	71	0.5	16	0.1	13	0.1
501-600	1,451	11.5	779	6.2	448	3.5	103	0.8	104	0.8	14	0.1	3	0.0
601-700	1,501	11.9	804	6.4	484	3.8	94	0.7	106	0.8	8	0.0	5	0.0
701-800	2,199	17.5	1,265	10.0	599	4.7	137	1.0	165	1.3	21	0.1	12	0.0
801-900	1,909	15.2	1,056	8.4	605	4.8	109	0.8	124	0.9	7	0.0	8	0.0
901-1000	1,125	8.9	530	4.2	385	3.0	95	0.7	102	0.8	10	0.0	3	0.0
1001-1100	1,237	9.8	419	3.3	449	3.5	128	1.0	190	1.5	34	0.2	17	0.1
1101-1200	624	4.9	271	2.1	165	1.3	54	0.4	105	0.8	18	0.1	11	0.0
1201-1300	183	1.4	62	0.4	41	0.3	23	0.1	44	0.3	10	0.0	3	0.0
1301-1400	121	0.9	68	0.5	35	0.2	6	0.0	11	0.0	1	0.0	0	0.0
1401-1500	94	0.7	50	0.3	22	0.1	12	0.0	7	0.0	1	0.0	2	0.0
>1500	820	6.5	421	3.3	268	2.1	63	0.5	59	0.4	4	0.0	5	0.0
TOTAL	12,547	100.0	6,138	48.9	3,959	31.5	985	7.8	1,205	9.6	158	1.2	102	0.8

TABLE 55

PERCENT OF DOLLAR NEEDS FOR COLLECTOR SEWERS BY SERVICE-AREA POPULATION AND PER-CAPITA COST

Table 55 summarizes for the nation the distribution of dollar needs for collector sewers.

The summary is presented in matrix form. The matrix shows national collector sewer dollar needs by service area population versus collector sewer dollar needs per capita. For service areas of a given population range, listed below are the percentages of the population group with per capita dollar needs in the ranges shown in the far left column. Also shown is the percentage of the national total dollar needs that each per capita dollar range represents for a given population group. For example, 16.2 percent of communities less than 1,000 people have dollar needs in the $701 to $800 per capita range. These needs represent 1.8 percent of the total needs nationally.

The service area populations were based on the total 1980 resident population in a community. The population in a community that met the qualifications of the Two-Thirds Rule was used to calculate the dollar per capita value. This rule states that two-thirds of the population requiring collector sewers in 1982 are required to have been residents of the service area on October 18, 1972 in order to be eligible for collector sewer funding from EPA.

Communities with service area populations less than 1,000 account for about 11.6 percent of the total national collector sewer dollar needs. Communities with per capita needs between $701 and $800 account for about 15.3 percent of the national total. Although not shown on the table, total national dollar needs for collector sewers are approximately $20.7 billion, expressed in January 1982 dollars.

Table 55 is an extension of Table 54.

DECEMBER 31, 1982
TABLE 55

1982 NEEDS SURVEY
PERCENT OF DOLLAR NEEDS FOR COLLECTOR SEWERS BY SERVICE-AREA POPULATION AND PER-CAPITA COST

COLLECTOR SEWER COST $/CAPITA	TOTAL	SERVICE-AREA POPULATION 0-999		1,000-4,999		5,000-9,999		10,000-49,999		50K-100K		>100K	
	% OF NATL. TOTAL COST	% OF POP. GROUP COST	% OF NATL. TOTAL COST	% OF POP. GROUP COST	% OF NATL. TOTAL COST	% OF POP. GROUP COST	% OF NATL. TOTAL COST	% OF POP. GROUP COST	% OF NATL. TOTAL COST	% OF POP. GROUP COST	% OF NATL. TOTAL COST	% OF POP. GROUP COST	% OF NATL. TOTAL COST
0-100	0.4	0.1	0.0	0.2	0.0	0.3	0.0	0.3	0.1	0.4	0.0	1.7	0.2
101-200	0.6	0.0	0.0	0.2	0.0	0.4	0.0	1.0	0.3	1.8	0.1	0.7	0.0
201-300	0.9	0.1	0.0	0.6	0.1	0.7	0.0	0.8	0.2	1.8	0.1	2.5	0.3
301-400	1.6	0.4	0.0	0.7	0.1	1.1	0.1	1.1	0.3	0.1	0.0	7.1	0.8
401-500	2.8	2.7	0.3	2.5	0.6	3.1	0.4	3.2	0.9	2.5	0.1	2.3	0.2
501-600	5.4	7.4	0.8	5.4	1.3	5.3	0.6	5.7	1.7	8.3	0.6	1.4	0.1
601-700	6.2	9.1	1.0	7.4	1.8	6.2	0.8	5.7	1.7	5.5	0.4	2.8	0.3
701-800	15.3	16.2	1.8	14.1	3.4	17.3	2.2	16.5	5.0	15.0	1.1	12.2	1.5
801-900	10.4	17.0	1.9	16.0	3.9	10.0	1.3	7.5	2.3	2.4	0.1	5.7	0.7
901-1000	8.0	9.9	1.1	11.1	2.7	10.7	1.4	7.2	2.1	6.2	0.4	0.	0.0
1001-1100	16.7	9.7	1.1	16.5	4.0	16.9	2.2	16.1	4.9	27.6	2.1	17.6	2.1
1101-1200	12.8	6.7	0.7	6.6	1.6	8.4	1.1	13.3	4.0	14.9	1.1	32.7	4.0
1201-1300	4.1	1.5	0.1	1.9	0.4	2.7	0.3	7.4	2.2	8.9	0.6	1.6	0.2
1301-1400	1.1	1.7	0.2	1.4	0.3	1.0	0.1	1.3	0.4	0.0	0.0	0.0	0.0
1401-1500	0.9	1.2	0.1	1.1	0.2	1.6	0.2	0.6	0.1	0.1	0.0	1.1	0.1
>1500	11.8	15.5	1.8	13.6	3.3	13.6	1.7	11.5	3.5	3.6	0.2	9.0	1.1
TOTAL	100.0	100.0	11.6	100.0	24.7	100.0	13.0	100.0	30.4	100.0	7.7	100.0	12.3

TABLE 56

TOTAL ESTIMATED I/I FLOW TO TREATMENT PLANTS
I/I THAT IS COST EFFECTIVE TO REMOVE

Table 56 summarizes by State the infiltration/inflow (I/I) quantities which are cost effective to eliminate from conveyance systems rather than to provide treatment.

The numbers listed under Plants are summations of the plants within each State from which some I/I flow will be eliminated. The Estimated I/I Flow is the summation of all I/I flows in a State that are cost effective to eliminate. The Existing Flow is the summation of the total average daily flow being received at the plants. The present design flow (PRES DES FLOW) is the summation of the 1982 design treatment capacity of the plants.

Only facilities being served by separate sewer systems are included in this summary. All flows are given in thousand cubic meters per day.

Tables 57 and 58 present summaries related to Table 56.

DECEMBER 31, 1982
TABLE 56

1982 NEEDS SURVEY
TOTAL ESTIMATED I/I FLOW TO TREATMENT PLANTS
I/I THAT IS COST EFFECTIVE TO REMOVE

STATE	PLANTS	ESTIMATED I/I FLOW	EXISTING FLOW	PRES DES FLOW
ALABAMA	69	331.64	768.13	938.45
ALASKA	0	0.00	0.00	0.00
ARIZONA	3	0.60	5.13	5.07
ARKANSAS	24	24.60	114.56	163.00
CALIFORNIA	16	81.22	152.44	623.35
COLORADO	15	6.81	32.81	27.49
CONNECTICUT	22	100.79	315.66	407.22
DELAWARE	0	0.00	0.00	0.00
DIST. OF COLUM.	0	0.00	0.00	0.00
FLORIDA	51	139.74	2,480.20	1,533.00
GEORGIA	104	169.37	604.03	904.74
HAWAII	0	0.00	0.00	0.00
IDAHO	18	8.44	64.36	80.73
ILLINOIS	94	324.52	5,589.11	7,522.63
INDIANA	42	20.77	65.53	82.58
IOWA	123	77.78	273.06	355.24
KANSAS	27	27.13	197.13	256.53
KENTUCKY	81	153.48	342.71	424.82
LOUISIANA	34	88.90	208.43	311.00
MAINE	10	31.30	70.60	91.40
MARYLAND	11	24.79	117.78	189.88
MASSACHUSETTS	13	20.21	84.40	123.08
MICHIGAN	40	68.62	353.68	427.45
MINNESOTA	81	28.84	103.47	123.80
MISSISSIPPI	65	89.32	365.68	500.52
MISSOURI	51	66.23	251.05	308.13
MONTANA	5	0.68	4.35	4.80
NEBRASKA	11	1.28	8.03	8.17
NEVADA	4	4.61	7.64	16.65
NEW HAMPSHIRE	9	11.65	36.93	37.20
NEW JERSEY	40	225.58	1,193.71	1,854.30
NEW MEXICO	0	0.00	0.00	0.00
NEW YORK	77	165.51	1,162.23	1,522.74
NORTH CAROLINA	115	142.77	835.25	1,225.01
NORTH DAKOTA	4	0.52	3.90	7.48
OHIO	68	158.47	452.81	585.70
OKLAHOMA	16	4.76	60.96	72.82
OREGON	34	153.89	398.86	499.47
PENNSYLVANIA	22	71.30	275.69	327.25
RHODE ISLAND	4	19.41	58.37	75.35
SOUTH CAROLINA	73	155.18	532.94	785.61
SOUTH DAKOTA	5	1.09	11.98	20.96
TENNESSEE	96	159.72	955.34	1,414.88
TEXAS	138	261.20	1,443.91	1,499.03
UTAH	0	0.00	0.00	0.00
VERMONT	0	0.00	0.00	0.00
VIRGINIA	0	0.00	0.00	0.00
WASHINGTON	0	0.00	0.00	0.00
WEST VIRGINIA	0	0.00	0.00	0.00
WISCONSIN	0	0.00	0.00	0.00
WYOMING	0	0.00	0.00	0.00
AMERICAN SAMOA	0	0.00	0.00	0.00
GUAM	0	0.00	0.00	0.00
N MARIANAS	0	0.00	0.00	0.00
PUERTO RICO	0	0.00	0.00	0.00
TRUST TERRITORIES	0	0.00	0.00	0.00
VIRGIN ISLANDS	0	0.00	0.00	0.00
U.S. TOTALS	1,715	3,422.92	20,0003.02	23,858.69

TABLE 57

REQUIRED I/I CORRECTION ACTIONS
FACILITIES WHERE CORRECTION IS COST EFFECTIVE

Table 57 summarizes, for those facilities requiring I/I corrections, the action necessary and the basis of estimate for such action.

Individual cost estimates developed for each category during the Needs Survey are accompanied by a basis of estimate code which corresponds to the accuracy of the estimate. The accuracy of the cost estimates can be ranked from high to low by the basis of estimate code. The basis of estimates, in order of decreasing accuracy, are listed below:

1. Engineer/consultant firm preconstruction estimate.
2. Sewer system evaluation survey completed.
3. Engineer/consultant preliminary estimate (approved facilities plan).
4. Infiltration/inflow analysis completed.
5. Cost effective analysis (unapproved facilities plan).
6. Cost of previous comparable construction.
7. EPA supplied cost estimating procedures.
8. State certification of dollar needs.
9. No basis given.

Only separate sewer systems are included in Table 57. Separate sewer systems are designed to convey wastewater from domestic and industrial sources only and do not convey stormwater runoff.

Table 57 is an expansion of the data presented in Table 56.

It is noted from the table that basis of estimates are given for 3,126 facilities which is slightly more than the number of facilities listed on Table 56. This is because Table 56 includes treatment facilities only. Table 57 includes both treatment facilities with appurtenant collection systems and separate collection systems where I/I flow is cost effective to eliminate.

DECEMBER 31, 1982
TABLE 57

1982 NEEDS SURVEY
REQUIRED I/I CORRECTION ACTIONS
FACILITIES WHERE CORRECTION IS COST EFFECTIVE

BASIS OF ESTIMATE	TOTAL	********** CORRECTIVE ACTION ********** NOT KNOWN	SEAL SEWER LINES	REPLACE OR RELINE SEWER SECTIONS	CHANGE OR CREATE FLOW ROUTING SYSTEM	PROVIDE FLOW EQUALIZATION	OTHER
STATE CERTIFICATION	0	0	0	0	0	0	0
I/I ANALYSIS COMPLETED	882	19	537	305	1	7	13
EVALUATION SURVEY COMPLETED	185	1	70	103	1	4	6
ENGINEER/CONSULTANT FIRM ESTIMATE	61	0	36	22	0	1	2
COST OF PREVIOUS COMPARABLE CONSTRUCTION	0	0	0	0	0	0	0
ENGINEER/CONSULTANT PRELIMINARY ESTIMATE	291	15	117	141	1	4	13
EPA - SUPPLIED COST ESTIMATING PROCEDURES	303	153	106	36	0	2	6
COST EFFECTIVE ANALYSIS	130	4	68	52	0	2	4
(NO BASIS GIVEN)	0	0	0	0	0	0	0
TOTALS	1,852	192	934	659	3	20	44

TABLE 58

DOLLAR NEEDS FOR I/I CORRECTION FACILITIES WHERE CORRECTION IS COST EFFECTIVE

Table 58 summarizes for the nation the dollar needs required for I/I corrective action by basis of estimate. Table 58 is a direct extension of Table 57.

Only dollar needs for I/I correction at facilities served by separate sewer systems are included.

All needs are given in January 1982 dollars.

DECEMBER 31, 1982
TABLE 58

1982 NEEDS SURVEY
DOLLAR NEEDS FOR I/I CORRECTION
FACILITIES WHERE CORRECTION IS COST EFFECTIVE
(THOUSANDS OF 1982 DOLLARS)

BASIS OF ESTIMATE	TOTAL	****** CORRECTIVE ACTION ****** NOT KNOWN	SEAL SEWER LINES	REPLACE OR RELINE SEWER SECTIONS	CHANGE OR CREATE FLOW ROUTING SYSTEM	PROVIDE FLOW EQUALIZATION	OTHER
STATE CERTIFICATION	0	0	0	0	0	0	0
I/I ANALYSIS COMPLETED	654,082	6,272	369,302	260,048	21	12,711	5,728
EVALUATION SURVEY COMPLETED	216,049	58	47,448	147,494	663	19,553	833
ENGINEER/CONSULTANT FIRM ESTIMATE	76,449	0	27,609	41,359	0	6,821	660
COST OF PREVIOUS COMPARABLE CONSTRUCTION	0	0	0	0	0	0	0
ENGINEER/CONSULTANT PRELIMINARY ESTIMATE	278,436	13,315	74,816	185,830	20	987	3,468
EPA - SUPPLIED COST ESTIMATING PROCEDURES	100,718	37,529	31,190	29,378	0	211	2,410
COST EFFECTIVE ANALYSIS	57,084	557	21,944	33,509	0	854	198
(NO BASIS GIVEN)	0	0	0	0	0	0	0
TOTALS	1,382,798	57,731	572,309	697,618	704	41,137	13,299

TABLE 59

FACILITIES REQUIRING MAJOR REHABILITATION BY BASIS OF ESTIMATE

Table 59 summarizes for the nation the number of collection systems requiring major rehabilitation by type of corrective action and basis of estimate.

Individual cost estimates made in Category III during the Needs Survey are accompanied by a basis of estimate code which corresponds to the accuracy of the estimate. The accuracy of the cost estimates can be ranked from high to low by the basis of estimate code. The basic of estimates, in order of decreasing accuracy, are listed below:

1. Engineer/consultant firm preconstruction estimate.
2. Sewer system evaluation survey completed.
3. Engineer/consultant preliminary estimate (approved facilities plan).
4. Infiltration/inflow analysis completed.
5. Cost effective analysis (unapproved facilities plan).
6. Cost of previous comparable construction.
7. EPA supplied cost estimating procedures.
8. State certification of dollar needs.
9. No basis given.

DECEMBER 31, 1982
TABLE 59

1982 NEEDS SURVEY
FACILITIES REQUIRING MAJOR REHABILITATION
BY BASIS OF ESTIMATE

BASIS OF ESTIMATE	TOTAL	CORRECTIVE ACTION					
		NOT KNOWN	SEAL SEWER LINES	REPLACE OR RELINE SEWER SECTIONS	CHANGE OR CREATE FLOW ROUTING SYSTEM	PROVIDE FLOW EQUALIZATION	OTHER
STATE CERTIFICATION	0	0	0	0	0	0	0
I/I ANALYSIS COMPLETED	49	0	1	43	1	0	4
EVALUATION SURVEY COMPLETED	59	0	1	27	1	0	30
ENGINEER/CONSULTANT FIRM ESTIMATE	28	0	1	22	1	0	4
COST OF PREVIOUS COMPARABLE CONSTRUCTION	0	0	0	0	0	0	0
ENGINEER/CONSULTANT PRELIMINARY ESTIMATE	161	0	3	122	5	0	31
EPA - SUPPLIED COST ESTIMATING PROCEDURES	31	0	2	27	0	0	2
COST EFFECTIVE ANALYSIS	61	0	3	49	3	0	6
(NO BASIS GIVEN)	0	0	0	0	0	0	0
TOTALS	389	0	11	290	11	0	77

TABLE 60

DOLLAR NEEDS FOR MAJOR REHABILITATION BY BASIS OF ESTIMATE

Table 60 summarizes for the nation the dollar needs for sewer systems requiring major rehabilitation by type of corrective action and basis of estimate.

Table 60 is a direct extension of Table 59.

DECEMBER 31, 1982
TABLE 60

1982 NEEDS SURVEY
DOLLAR NEEDS FCR MAJOR REHABILITATION
BY BASIS OF ESTIMATE
(THOUSANDS OF DOLLARS)

BASIS OF ESTIMATE	TOTAL	CORRECTIVE ACTION					
		NOT KNOWN	SEAL SEWER LINES	REPLACE OR RELINE SEWER SECTIONS	CHANGE OR CREATE FLOW ROUTING SYSTEM	PROVIDE FLOW EQUALIZATION	OTHER
STATE CERTIFICATION	0	0	0	0	0	0	0
I/I ANALYSIS COMPLETED	101,934	0	187	99,374	107	0	2,266
EVALUATION SURVEY COMPLETED	1,085,499	0	22	1,034,556	952	0	49,969
ENGINEER/CONSULTANT FIRM ESTIMATE	50,951	0	471	40,895	3,290	0	6,295
COST OF PREVIOUS COMPARABLE CONSTRUCTION	0	0	0	0	0	0	0
ENGINEER/CONSULTANT PRELIMINARY ESTIMATE	286,329	0	8,034	139,827	4,199	0	134,269
EPA - SUPPLIED COST ESTIMATING PROCEDURES	2,925,387	0	696	2,924,228	0	0	463
COST EFFECTIVE ANALYSIS	242,158	0	496	239,774	835	0	1,053
(NO BASIS GIVEN)	0	0	0	0	0	0	0
TOTALS	4,692,258	0	9,906	4,478,654	9,383	0	194,315

CHAPTER IV

SUMMARIES FOR COMBINED SEWER OVERFLOW AND STORMWATER RUNOFF TECHNICAL DATA (CATEGORIES V AND VI)

Technical data collection for Categories V and VI of the 1982 Needs Survey was performed using the combined sewer system worksheet which is described in Appendix D of this report. As with the 1980 Survey, data were collected for Categories V and VI in conjunction with data collected for Categories I through IV.

The technical data summaries presented in the seven tables which follow were compiled from two sources. The first source was the National Combined Sewer System Data File, which represents the inventory of combined sewer data identified from readily available sources during the 1982 Survey. These data items include total combined sewer area, population served, and the types of receiving waters to which combined sewer overflow (CSO) is discharged. The second source was the Urbanized Area Data Base, which was required to estimate treatment needs for urban stormwater runoff (SWR), as well as CSO. In addition, the Urbanized Area Data Base includes data developed by the Needs Estimation Program (NEP82) utilized for the Category V and VI portions of the 1982 Survey. These additional data items include the estimated number and capacity of wet-weather treatment plants and storage basins required to meet the selected water quality objectives. A brief discussion on the conduct of the Category V and VI portions of the 1982 Survey is presented in Appendix B. The discussion includes the basis for developing Category V and VI cost estimates.

The technical tables which follow include a discussion of each table presented immediately before the table. The reader should also consult Appendices B and D for information related to the conduct of this portion of the Survey and the combined sewer data collection worksheet, respectively.

TABLE 61

SUMMARY OF EXISTING COMBINED SEWER SYSTEMS

Table 61 lists the total number of combined sewer systems identified for each State by the 1982 Survey. Each system identified corresponds to a worksheet in the National Combined Sewer System Data File. The worksheet is described in Appendix D, and conduct of the Categories V and VI portion of the Needs Survey is described in Appendix B. Totals by State for each of the following items are contained in Table 61:

Number of Combined Sewer Systems: The number of combined sewer systems in each State corresponds to the number of worksheets entered on the combined sewer system data file for that State. A separate worksheet was completed for each combined sewer system/major receiving water configuration.

Combined Sewer Area: The area, in hectares, drained directly by the combined sewer system which is tributary to the subject receiving water.

Population Served: The total number of people resident to the area drained directly by the combined sewer system.

Combined Sewer Length: The total length of combined sewer, in meters, tributary to the subject receiving water.

Number of CSO Points: The number of points at which the combined wastewater/stormwater is discharged from the collection system directly into the receiving water during periods of high flow.

TABLE 61

1982 NEEDS SURVEY
SUMMARY OF EXISTING COMBINED SEWER SYSTEMS

LENGTH IN METERS
AREA IN HECTARES

STATE	# OF SYSTEMS	COMBINED SEWER AREA	POPULATION SERVED	COMBINED SEWER LENGTH	CSO POINTS
ALABAMA	0	0	0	0	0
ALASKA	2	131	4,860	1,189	0
AMERICAN SAMOA	0	0	0	0	0
ARIZONA	0	0	0	0	0
ARKANSAS	0	0	0	0	0
CALIFORNIA	5	13,846	852,119	1,641,046	44
COLORADO	4	7,025	147,841	81,132	3
CONNECTICUT	14	7,820	415,217	954,591	242
DELAWARE	5	3,423	90,068	320,470	53
DIST. OF COLUMBIA	1	5,959	489,093	1,068,696	59
FLORIDA	1	255	4,370	29,195	10
GEORGIA	8	10,838	338,235	710,043	31
GUAM	0	0	0	0	0
HAWAII	0	0	0	0	0
IDAHO	14	3,769	46,012	323,429	24
ILLINOIS	75	131,451	5,195,306	14,556,407	1,015
INDIANA	130	133,380	2,509,998	8,254,963	1,100
IOWA	19	9,393	342,264	686,410	82
KANSAS	3	11,542	464,000	554,002	17
KENTUCKY	17	20,342	768,556	1,097,522	108
LOUISIANA	0	0	0	0	0
MAINE	61	22,729	390,776	1,674,351	293
MARIANAS GROUP	0	0	0	0	0
MARYLAND	8	2,219	47,605	223,736	37
MASSACHUSETTS	34	28,113	1,884,156	2,966,258	371
MICHIGAN	92	107,282	2,599,561	12,265,108	594
MINNESOTA	17	11,482	530,452	2,553,382	105
MISSISSIPPI	0	0	0	0	0
MISSOURI	14	35,885	871,501	3,412,709	91
MONTANA	16	3,521	130,243	381,858	0
NEBRASKA	3	6,849	199,405	584,398	23
NEVADA	0	0	0	0	0
NEW HAMPSHIRE	22	5,639	227,156	674,869	164
NEW JERSEY	30	48,116	2,003,084	2,646,883	320
NEW MEXICO	0	0	0	0	0
NEW YORK	81	182,397	12,105,832	10,781,975	942
NORTH CAROLINA	1	121	8,000	34,708	0
NORTH DAKOTA	8	533	16,888	71,117	8
OHIO	120	128,457	2,699,597	9,277,094	1,593
OKLAHOMA	0	0	0	0	0
OREGON	12	11,217	245,036	1,951,061	108
PAC. TR. TERR.	0	0	0	0	0
PENNSYLVANIA	111	91,130	4,152,646	8,677,615	1,345
PUERTO RICO	1	432	600,000	80,520	0
RHODE ISLAND	3	3,865	220,550	431,575	88
SOUTH CAROLINA	0	0	0	0	0
SOUTH DAKOTA	10	2,478	90,991	268,720	1
TENNESSEE	4	8,419	158,285	685,833	50
TEXAS	1	1,891	35,000	40,931	0
UTAH	1	103	3,818	11,179	0
VERMONT	31	6,816	128,312	457,661	169
VIRGIN ISLANDS	0	0	0	0	0
VIRGINIA	12	10,268	537,350	1,269,233	153
WASHINGTON	32	28,748	502,457	2,654,656	270
WEST VIRGINIA	47	23,863	435,050	2,271,838	553
WISCONSIN	9	10,591	568,034	1,334,454	275
WYOMING	1	395	14,645	42,881	0
U.S. TOTALS	1,080	1,142,738	43,066,369	98,005,697	13,341

TABLE 62

RECEIVING WATER TYPES FOR COMBINED SEWER OVERFLOW

Table 62 identifies the type of major receiving water body into which the combined sewer system discharges when overflow occurs. For the purposes of this table, a stream includes all channels with a mean depth less than 10 feet. This includes classification codes 1, 2, and 3 from Item 20 of the worksheet. A river includes all channels with a mean depth greater than or equal to 10 feet. This includes classification codes 4, 5, and 6 from Item 20 of the worksheet. Lakes include classification codes 7 and 8 of the worksheet, while estuaries include codes 9 through 14 of the worksheet. Each of these classification codes are defined in Appendix D of this report.

It should be noted that not all major receiving waters have been identified on the 1982 data file. Of over 1,080 systems in the 1982 data file, 902 (approximately 84 percent) are identified as to major receiving water type.

Table 62 contains the following items:

Number of Combined Sewer Systems: Same as Table 61.

Combined Sewer Area: Same as Table 61.

Number of Systems Discharging to Streams: The total number of combined sewer systems, by State, known to discharge into streams. The definition of a stream is presented above.

Total Combined Sewer Area Discharging to Streams: The total area, in hectares, of combined sewer systems, by State, known to discharge into streams.

Number of Systems Discharging to Rivers: The total number of combined sewer systems, by State, known to discharge into rivers.

Total Combined Sewer Area Discharging to Rivers: The total area, in hectares, of combined sewer systems, by State, known to discharge into rivers.

Number of Systems Discharging to Lakes: The total number of combined sewer systems, by State, known to discharge into lakes.

Total Combined Sewer Area Discharging to Lakes: The total area, in hectares, of combined sewer systems, by State, known to discharge into lakes.

Number of Systems Discharging to Estuaries: The total number of combined sewer systems, by State, known to discharge into estuaries.

Total Combined Sewer Area Discharging to Estuaries: The total area, in hectares, of combined sewer systems, by State, known to discharge into estuaries.

Number of Systems Discharging to Oceans: The total number of combined sewer systems, by State, known to discharge into oceans.

Total Combined Sewer Area Discharging to Oceans: The total area, in hectares, of combined sewer systems, by State, known to discharge into oceans.

1982 NEEDS SURVEY

TABLE 62

RECEIVING WATER TYPES FOR COMBINED SEWER OVERFLOW

AREA IN HECTARES

STATE	# OF SYSTEMS	TOTAL CS AREA	STREAM DISCHARGE #	STREAM DISCHARGE AREA	RIVER DISCHARGE #	RIVER DISCHARGE AREA	LAKE DISCHARGE #	LAKE DISCHARGE AREA	ESTUARY DISCHARGE #	ESTUARY DISCHARGE AREA	OCEAN DISCHARGE #	OCEAN DISCHARGE AREA
ALABAMA	0	0	0	0	0	0	0	0	0	0	0	0
ALASKA	2	131	0	0	0	0	0	0	2	131	0	0
AMERICAN SAMOA	0	0	0	0	0	0	0	0	0	0	0	0
ARIZONA	0	0	0	0	0	0	0	0	0	0	0	0
ARKANSAS	0	0	0	0	0	0	0	0	0	0	0	0
CALIFORNIA	5	13,846	1	668	1	2,754	1	445	1	6,342	1	3,636
COLORADO	4	7,025	1	479	1	6,480	0	0	0	0	0	0
CONNECTICUT	14	7,820	2	297	3	757	0	0	9	6,766	0	0
DELAWARE	5	3,423	1	10	0	0	0	0	4	3,413	0	0
DIST. OF COLUMBIA	1	5,959	0	0	0	0	0	0	1	5,959	0	0
FLORIDA	1	255	0	0	0	0	1	255	0	0	0	0
GEORGIA	8	10,838	2	3,769	5	7,015	0	0	1	55	0	0
GUAM	0	0	0	0	0	0	0	0	0	0	0	0
HAWAII	0	0	0	0	0	0	0	0	0	0	0	0
IDAHO	14	3,769	3	236	9	3,414	1	12	0	0	0	0
ILLINOIS	75	131,451	28	38,451	17	85,810	0	0	0	0	0	0
INDIANA	130	133,380	85	52,235	16	51,078	5	8,327	0	0	0	0
IOWA	19	9,393	10	3,453	9	5,941	0	0	0	0	0	0
KANSAS	3	11,542	0	0	3	11,542	0	0	0	0	0	0
KENTUCKY	17	20,342	0	0	15	19,988	0	0	0	0	0	0
LOUISIANA	0	0	0	0	0	0	0	0	0	0	0	0
MAINE	61	22,729	18	1,970	24	12,217	0	0	17	8,428	2	115
MARIANAS GROUP	0	0	0	0	0	0	0	0	0	0	0	0
MARYLAND	8	2,219	5	1,446	1	587	0	0	1	134	0	0
MASSACHUSETTS	34	28,113	16	6,582	4	3,690	0	0	13	17,833	0	0
MICHIGAN	92	107,282	57	56,598	11	45,310	6	3,239	0	0	0	0
MINNESOTA	17	11,482	3	493	4	10,551	0	0	0	0	0	0
MISSISSIPPI	0	0	0	0	0	0	0	0	0	0	0	0
MISSOURI	14	35,885	7	12,585	6	23,061	0	0	0	0	0	0
MONTANA	16	3,521	5	1,285	5	2,179	0	0	0	0	0	0
NEBRASKA	3	6,849	1	1,455	2	5,394	0	0	0	0	0	0
NEVADA	0	0	0	0	0	0	0	0	0	0	0	0
NEW HAMPSHIRE	22	5,639	7	818	9	3,511	1	1	3	1,231	0	0
NEW JERSEY	30	48,116	4	4,883	0	0	0	0	25	41,072	0	0
NEW MEXICO	0	0	0	0	0	0	0	0	0	0	0	0
NEW YORK	81	182,397	24	35,066	33	55,849	4	9,142	18	82,324	0	0
NORTH CAROLINA	1	121	0	0	1	121	0	0	0	0	0	0
NORTH DAKOTA	8	533	2	26	2	437	0	0	0	0	0	0
OHIO	120	120,457	57	44,898	18	32,826	8	21,576	0	0	0	0
OKLAHOMA	0	0	0	0	0	0	0	0	0	0	0	0
OREGON	12	11,217	5	185	5	10,498	0	0	2	535	0	0
PAC. TR. TERR.	0	0	0	0	0	0	0	0	0	0	0	0
PENNSYLVANIA	111	91,130	73	37,671	19	23,960	2	6,029	2	19,243	0	0
PUERTO RICO	1	432	1	432	0	0	0	0	0	0	0	0
RHODE ISLAND	3	3,865	0	0	0	0	0	0	3	3,865	0	0
SOUTH CAROLINA	0	0	0	0	0	0	0	0	0	0	0	0
SOUTH DAKOTA	10	2,478	6	187	1	2,160	0	0	0	0	0	0
TENNESSEE	4	8,419	0	0	3	8,216	0	0	0	0	0	0
TEXAS	1	1,891	0	0	0	0	0	0	0	0	0	0
UTAH	1	103	1	103	0	0	0	0	0	0	0	0
VERMONT	31	6,816	12	2,377	12	2,954	4	1,194	0	0	0	0
VIRGIN ISLANDS	0	0	0	0	0	0	0	0	0	0	0	0
VIRGINIA	12	10,268	4	820	5	4,845	0	0	3	4,602	0	0
WASHINGTON	32	28,748	5	2,182	8	7,594	1	153	10	16,353	0	0
WEST VIRGINIA	47	23,863	25	11,736	18	11,753	0	0	0	0	0	0
WISCONSIN	9	10,591	1	36	2	1,085	5	9,469	0	0	0	0
WYOMING	1	395	1	395	0	0	0	0	0	0	0	0
U.S. TOTALS	1,080	1,142,738	473	323,747	272	464,381	39	59,843	115	218,285	3	3,751

TABLE 63

SUMMARY OF PRESENT AND PROJECTED URBANIZED AREA CHARACTERISTICS

Table 63 provides drainage area and population data for both combined and separately sewered Urbanized Areas in the U.S. The specific criteria for defining Urbanized Areas are given in Appendix B. Since the use of combined sewers is no longer considered accepted engineering practice, it was assumed that present and projected combined sewer system characteristics would be the same and that all future growth would occur in separately sewered areas. The following items are contained in Table 63:

Number of Urbanized Areas: The total number of Urbanized Areas as defined in Appendix B, listed by State.

Combined Sewer Area in Urbanized Areas: The combined sewer area, in hectares, located within Urbanized Areas, listed by State.

Combined Sewer Population in Urbanized Areas: The total population residing within the combined sewer area in Urbanized Areas, listed by State.

Stormwater Runoff Area (1970): The Urbanized Area, in hectares, which contributes stormwater runoff based on 1970 census data, listed by State.

Stormwater Runoff Population (1970): The estimated 1970 population, based on census data, which resides within the stormwater runoff area for Urbanized Areas, listed by State.

Stormwater Runoff Area (2000): The Urbanized Area, in hectares, which contributes stormwater runoff based on projected year 2000 population estimates, listed by State.

Stormwater Runoff Population (2000): The projected year 2000 population for the stormwater runoff area for Urbanized Areas, listed by State.

TABLE 63

1982 NEEDS SURVEY

AREA IN HECTARES

SUMMARY OF PRESENT AND PROJECTED URBANIZED AREA CHARACTERISTICS

TABLE 63

STATE	# OF UA S	-----COMBINED SEWER----- AREA	POPULATION	STORMWATER RUNOFF (1970) AREA	POPULATION	STORMWATER RUNOFF (2000) AREA	POPULATION
ALABAMA	9	0	0	198,081	1,402,102	244,859	1,702,400
ALASKA	1	0	0	14,126	110,782	50,978	399,781
AMERICAN SAMOA	0	0	0	0	0	0	0
ARIZONA	2	0	0	127,578	1,157,541	322,597	2,904,408
ARKANSAS	4	0	0	46,786	378,624	84,967	692,603
CALIFORNIA	18	12,732	827,119	1,021,346	15,453,994	1,411,007	21,144,280
COLORADO	4	6,480	96,806	104,561	1,327,205	204,920	2,559,818
CONNECTICUT	12	6,221	294,047	217,132	1,946,732	240,587	2,126,458
DELAWARE	1	2,809	80,368	22,359	269,306	38,011	457,825
DIST. OF COLUMBIA	1	5,959	489,093	9,956	267,417	26,058	699,898
FLORIDA	15	0	0	482,268	4,731,073	1,047,544	10,774,658
GEORGIA	7	10,693	324,835	178,627	1,555,325	293,120	2,519,008
GUAM	0	0	0	0	0	0	0
HAWAII	1	0	0	29,808	442,397	56,681	841,227
IDAHO	1	0	0	7,620	85,187	15,599	174,382
ILLINOIS	13	104,031	4,821,111	305,479	3,148,669	412,410	4,255,115
INDIANA	10	84,574	1,599,102	181,406	796,031	250,627	1,209,516
IOWA	7	1,822	98,000	111,604	744,155	134,322	903,622
KANSAS	4	11,380	459,000	52,123	326,933	304,382	557,243
KENTUCKY	6	14,083	504,160	69,976	630,329	139,237	1,056,425
LOUISIANA	7	0	0	103,291	1,780,735	131,642	2,323,091
MAINE	2	5,742	136,500	26,295	35,311	62,694	93,015
MARIANAS GROUP	0	0	0	0	0	0	0
MARYLAND	2	0	0	144,530	2,588,919	198,109	3,470,905
MASSACHUSETTS	11	21,561	1,567,099	330,718	2,767,097	394,969	3,302,096
MICHIGAN	13	90,443	2,263,202	302,504	3,473,563	358,151	4,150,579
MINNESOTA	6	9,259	504,000	207,847	1,449,893	276,526	1,895,618
MISSISSIPPI	3	0	0	36,055	320,592	48,402	446,145
MISSOURI	5	34,947	780,620	196,829	1,797,221	257,508	2,190,148
MONTANA	2	0	0	12,623	142,102	16,824	187,870
NEBRASKA	3	6,739	191,505	36,262	396,787	56,837	621,924
NEVADA	2	0	0	41,135	336,368	96,192	791,692
NEW HAMPSHIRE	3	2,597	138,800	19,435	35,143	161,263	195,685
NEW JERSEY	7	39,793	1,896,617	561,784	4,181,755	805,369	5,832,867
NEW MEXICO	1	0	0	29,652	297,451	49,964	501,205
NEW YORK	9	146,996	11,295,932	161,867	3,148,561	167,292	5,600,322
NORTH CAROLINA	11	0	0	162,907	1,367,048	198,900	1,690,861
NORTH DAKOTA	1	93	2,300	3,873	51,120	5,277	69,658
OHIO	17	75,372	2,115,315	501,374	4,534,248	582,692	5,259,878
OKLAHOMA	4	0	0	146,681	1,049,072	209,548	1,477,807
OREGON	3	10,133	227,777	74,962	756,275	136,455	1,379,866
PAC. TR. TERR.	0	0	0	0	0	0	0
PENNSYLVANIA	14	63,812	3,273,150	426,931	3,712,709	434,788	3,861,647
PUERTO RICO	4	432	600,000	36,452	484,077	52,561	729,987
RHODE ISLAND	2	4,805	190,550	50,301	554,688	47,513	523,520
SOUTH CAROLINA	5	0	0	84,266	723,074	104,132	903,647
SOUTH DAKOTA	2	2,160	47,600	4,994	28,406	10,372	58,186
TENNESSEE	6	5,551	116,500	202,223	1,519,119	275,565	2,049,263
TEXAS	28	1,891	35,000	806,813	6,955,930	1,775,360	14,485,772
UTAH	3	0	0	80,430	733,179	96,392	857,675
VERMONT	0	0	0	0	0	0	0
VIRGIN ISLANDS	0	0	0	0	0	0	0
VIRGINIA	8	8,527	457,591	229,989	1,943,491	399,232	2,873,425
WASHINGTON	6	23,567	559,660	164,924	1,449,733	244,164	2,139,506
WEST VIRGINIA	5	8,601	230,265	29,113	168,170	32,784	208,988
WISCONSIN	9	9,469	444,600	187,316	1,622,045	266,233	2,327,447
WYOMING	0	0	0	0	0	0	0
U.A. TOTALS	320	833,274	36,668,224	8,585,213	85,177,684	13,231,622	127,478,962

TABLE 64

RECEIVING WATER TYPES FOR URBAN STORMWATER RUNOFF PRESENT CONDITIONS (1970)

Table 64 identifies the type of major receiving water into which urban stormwater is discharged for the 1970 Urbanized Area data presented in Table 63. The specific criteria for defining an Urbanized Area are given in Appendix B. For the purposes of this table, a stream includes all channels with a mean depth less than 10 feet, and a river includes all channels with a mean depth greater than or equal to 10 feet. The following items are contained in Table 64:

Number of Urbanized Areas: The total number of Urbanized Areas as defined in Appendix B, listed by State. This item is the same as presented in Table 63.

Stormwater Runoff Area (1970): The Urbanized Area, in hectares, which contributes stormwater runoff based on 1970 census data. This item is the same as presented in Table 63.

Stormwater Runoff Area Discharging to Streams: The total 1970 stormwater drainage area, in hectares, known to discharge into streams as defined above.

Stormwater Runoff Area Discharging to Rivers: The total 1970 stormwater drainage area, in hectares, known to discharge into rivers as defined above.

Stormwater Runoff Area Discharging to Lakes: The total 1970 stormwater drainage area, in hectares, known to discharge into lakes.

Stormwater Runoff Area Discharging to Estuaries: The total 1970 stormwater drainage area, in hectares, known to discharge into estuaries.

Stormwater Runoff Area Discharging to Oceans: The total 1970 stormwater drainage area, in hectares, known to discharge into oceans.

TABLE 64

1982 NEEDS SURVEY

AREA IN HECTARES

RECEIVING WATER TYPES FOR URBAN STORMWATER RUNOFF PRESENT CONDITIONS

STATE	# OF UA S	STORMWATER TOTAL AREA	STREAM DISCHARGE	RIVER DISCHARGE	LAKE DISCHARGE	ESTUARY DISCHARGE	OCEAN DISCHARGE
ALABAMA	9	198,081	99,818	54,613	0	43,649	0
ALASKA	1	14,126	0	0	0	14,126	0
AMERICAN SAMOA	0	0	0	0	0	0	0
ARIZONA	2	127,578	127,578	0	0	0	0
ARKANSAS	4	46,786	1,763	45,023	0	0	0
CALIFORNIA	18	1,021,346	219,802	69,433	0	172,317	559,794
COLORADO	4	104,561	104,561	0	0	0	0
CONNECTICUT	12	217,132	49,436	57,657	0	72,839	37,200
DELAWARE	1	22,359	0	0	0	22,359	0
DIST. OF COLUMBIA	1	9,956	0	0	0	9,956	0
FLORIDA	15	482,268	7,517	7,724	41,213	358,759	67,055
GEORGIA	7	178,627	0	162,067	0	16,560	0
GUAM	0	0	0	0	0	0	0
HAWAII	1	29,808	0	0	0	0	29,808
IDAHO	1	7,620	7,620	0	0	0	0
ILLINOIS	13	305,479	199,117	97,680	8,683	0	0
INDIANA	10	181,406	49,063	132,343	0	0	0
IOWA	7	111,604	60,921	50,683	0	0	0
KANSAS	4	52,123	0	52,123	0	0	0
KENTUCKY	6	69,976	10,342	59,634	0	0	0
LOUISIANA	7	103,291	0	103,291	0	0	0
MAINE	2	26,295	0	15,777	0	0	10,518
MARIANAS GROUP	0	0	0	0	0	0	0
MARYLAND	2	144,530	0	0	0	144,530	0
MASSACHUSETTS	11	330,718	60,688	79,858	0	190,172	0
MICHIGAN	13	302,504	140,020	148,928	13,556	0	0
MINNESOTA	6	207,847	3,940	185,478	18,429	0	0
MISSISSIPPI	3	36,055	0	19,544	0	0	16,511
MISSOURI	5	196,829	27,242	169,587	0	0	0
MONTANA	2	12,623	0	12,623	0	0	0
NEBRASKA	3	36,262	13,504	22,758	0	0	0
NEVADA	2	41,135	41,135	0	0	0	0
NEW HAMPSHIRE	3	19,435	0	19,435	0	0	0
NEW JERSEY	7	561,784	36,128	1,788	0	506,476	17,392
NEW MEXICO	1	29,652	29,652	0	0	0	0
NEW YORK	9	161,867	36,364	92,658	15,578	17,267	0
NORTH CAROLINA	11	162,907	126,412	28,901	0	7,595	0
NORTH DAKOTA	1	3,873	0	3,873	0	0	0
OHIO	17	501,374	224,176	120,329	156,870	0	0
OKLAHOMA	4	146,681	99,300	47,382	0	0	0
OREGON	3	74,962	0	74,962	0	0	0
PAC. TR. TERR.	0	0	0	0	0	0	0
PENNSYLVANIA	14	426,931	63,171	195,264	0	168,496	0
PUERTO RICO	4	36,452	6,610	0	0	26,136	3,707
RHODE ISLAND	2	50,301	0	0	0	50,301	0
SOUTH CAROLINA	5	84,266	27,734	30,819	0	25,713	0
SOUTH DAKOTA	2	4,994	0	4,994	0	0	0
TENNESSEE	6	202,223	0	202,223	0	0	0
TEXAS	28	806,813	317,157	409,692	18,922	33,774	27,268
UTAH	3	80,430	0	0	80,430	0	0
VERMONT	0	0	0	0	0	0	0
VIRGIN ISLANDS	0	0	0	0	0	0	0
VIRGINIA	8	229,989	17,211	50,265	0	162,514	0
WASHINGTON	6	164,924	5,754	35,841	0	123,329	0
WEST VIRGINIA	5	29,113	0	29,113	0	0	0
WISCONSIN	9	187,316	0	116,621	70,695	0	0
WYOMING	0	0	0	0	0	0	0
U.A. TOTALS	320	8,585,213	2,213,735	3,010,983	424,376	2,166,866	769,253

TABLE 65

RECEIVING WATER TYPES FOR URBAN STORMWATER RUNOFF
(YEAR 2000 CONDITIONS)

Table 65 identifies the type of major receiving water body into which urban stormwater is discharged for the projected year 2000 Urbanized Area presented in Table 63. The specific criteria for defining an Urbanized Area are given in Appendix B. For the purposes of this table, a stream includes all channels with a mean depth less than 10 feet, and a river includes all channels with a mean depth greater than or equal to 10 feet. The following items are contained in Table 65:

Number of Urbanized Areas: The total number of Urbanized Areas as defined in Appendix B, listed by State. This item is the same as presented in Table 63.

Stormwater Runoff Area (2000): The Urbanized Area, in hectares, which contributes stormwater runoff directly to a major receiving water, based on projected year 2000 estimates. This item is the same as presented in Table 63.

Stormwater Runoff Area Discharging to Streams: The total projected year 2000 stormwater drainage area, in hectares, known to discharge into streams as defined above.

Stormwater Runoff Area Discharging to Rivers: The total projected year 2000 stormwater drainage area, in hectares, known to discharge into rivers as defined above.

Stormwater Runoff Area Discharging to Lakes: The total projected year 2000 stormwater drainage area, in hectares, known to discharge into lakes.

Stormwater Runoff Area Discharging to Estuaries: The total projected year 2000 stormwater drainage area, in hectares, known to discharge into estuaries.

Stormwater Runoff Area Discharging to Oceans: The total projected year 2000 stormwater drainage area, in hectares, known to discharge into oceans.

TABLE 65

AREA IN HECTARES

1982 NEEDS SURVEY
RECEIVING WATER TYPES FOR URBAN STORMWATER RUNOFF YEAR 2000 CONDITIONS

STATE	# OF UA S	STORMWATER TOTAL AREA	STREAM DISCHARGE	RIVER DISCHARGE	LAKE DISCHARGE	ESTUARY DISCHARGE	OCEAN DISCHARGE
ALABAMA	9	244,859	124,026	67,904	0	52,929	0
ALASKA	1	50,978	0	0	0	50,978	0
AMERICAN SAMOA	0	0	0	0	0	0	0
ARIZONA	2	322,597	322,597	0	0	0	0
ARKANSAS	4	84,967	2,525	82,443	0	0	0
CALIFORNIA	18	1,411,007	320,962	96,765	0	245,665	747,616
COLORADO	4	204,920	204,920	0	0	0	0
CONNECTICUT	12	240,587	38,723	61,346	0	92,108	48,410
DELAWARE	1	38,011	0	0	0	38,011	0
DIST. OF COLUMBIA	1	26,058	0	0	0	26,058	0
FLORIDA	15	1,047,544	15,848	16,387	82,542	756,384	176,384
GEORGIA	7	293,120	0	274,754	0	18,366	0
GUAM	0	0	0	0	0	0	0
HAWAII	1	56,681	0	0	0	0	56,681
IDAHO	1	15,599	15,599	0	0	0	0
ILLINOIS	13	412,410	286,122	114,718	11,570	0	0
INDIANA	10	250,627	61,722	188,905	0	0	0
IOWA	7	134,322	75,730	58,593	0	0	0
KANSAS	4	304,382	0	304,382	0	0	0
KENTUCKY	6	139,237	11,627	127,611	0	0	0
LOUISIANA	7	131,642	0	131,642	0	0	0
MAINE	2	62,694	0	29,963	0	0	32,732
MARIANAS GROUP	0	0	0	0	0	0	0
MARYLAND	2	198,109	0	0	0	198,109	0
MASSACHUSETTS	11	394,969	79,318	89,178	0	226,473	0
MICHIGAN	13	358,151	169,015	176,458	12,678	0	0
MINNESOTA	6	276,526	516	260,093	15,916	0	0
MISSISSIPPI	3	48,402	0	31,862	0	0	16,541
MISSOURI	5	257,508	41,321	216,187	0	0	0
MONTANA	2	16,824	0	16,824	0	0	0
NEBRASKA	3	56,837	19,112	37,725	0	0	0
NEVADA	2	96,192	96,192	0	0	0	0
NEW HAMPSHIRE	3	161,263	0	161,263	0	0	0
NEW JERSEY	7	805,369	52,582	1,695	0	732,498	18,594
NEW MEXICO	1	49,964	49,964	0	0	0	0
NEW YORK	9	167,292	47,098	67,327	17,035	35,831	0
NORTH CAROLINA	11	198,900	149,395	38,977	0	10,528	0
NORTH DAKOTA	1	5,277	0	5,277	0	0	0
OHIO	17	582,692	262,566	147,644	172,482	0	0
OKLAHOMA	4	209,548	151,928	57,620	0	0	0
OREGON	3	136,455	0	136,455	0	0	0
PAC. TR. TERR.	0	0	0	0	0	0	0
PENNSYLVANIA	14	434,788	49,026	172,622	0	213,140	0
PUERTO RICO	4	52,561	10,709	0	0	35,793	6,058
RHODE ISLAND	2	47,513	0	0	0	47,513	0
SOUTH CAROLINA	5	104,132	26,284	49,522	0	28,326	0
SOUTH DAKOTA	2	10,372	0	10,372	0	0	0
TENNESSEE	6	275,565	0	275,565	0	0	0
TEXAS	28	1,775,360	865,197	781,624	28,557	48,348	51,634
UTAH	3	96,392	0	0	96,392	0	0
VERMONT	0	0	0	0	0	0	0
VIRGIN ISLANDS	0	0	0	0	0	0	0
VIRGINIA	8	399,232	23,609	169,692	0	205,931	0
WASHINGTON	6	244,164	6,151	54,048	0	183,964	0
WEST VIRGINIA	5	32,784	0	32,784	0	0	0
WISCONSIN	9	266,233	0	157,733	108,499	0	0
WYOMING	0	0	0	0	0	0	0
U.A. TOTALS	320	13,231,622	3,580,385	4,703,960	545,672	3,246,954	1,154,651

TABLE 66

SELECTED FACILITIES FOR CSO CONTROL IN URBANIZED AREAS BY STREAM USE OBJECTIVE

Table 66 presents information which was developed as part of the cost estimating procedure for Categories V and VI of the 1982 Needs Survey. These CSO control data were developed only for Urbanized Areas as presented in Table 63. The storage and treatment requirements presented in Table 59 were estimated using the 1982 Needs Estimation Program (NEP82) for the Fish and Wildlife and Recreation water quality objectives. The Fish and Wildlife objective was based on eliminating low dissolved oxygen events (less than 2.0 mg/l) and insuring that Solids concentrations in CSO would be less than or equal to background Solids concentrations in the receiving water. The Recreation objective was based on scaling up the facilities required to meet the Fish and Wildlife objective such that a 95 percent removal of fecal coliform organisms would be obtained. A brief description of the basis for Category V and VI cost estimates is presented in Appendix B. The following items are contained in Table 66:

Number of Urbanized Areas: The total number of Urbanized Areas as defined in Appendix B, listed by State. This item is the same as presented in Table 63.

Combined Sewer Area in Urbanized Areas: The combined sewer area, in hectares, located within Urbanized Areas, listed by State. This item is the same as presented in Table 63.

Number of CSO Treatment Plants: The total estimated number of CSO treatment plants required to meet the Fish and Wildlife water quality objective in Urbanized Areas, listed by State.

Number of CSO Storage Basins: The total estimated number of CSO storage basins required to meet the Fish and Wildlife water quality objective in Urbanized Areas, listed by State.

Total CSO Treatment Capacity for Fish and Wildlife: The total estimated CSO treatment capacity, in 1,000 cubic meters per day (m^3/day), required to meet the Fish and Wildlife water quality objective in Urbanized Areas, listed by State.

Average CSO Unit Treatment Capacity for Fish and Wildlife: The estimated average CSO unit treatment capacity, in 1,000 m^3/day/hectare, required to meet the Fish and Wildlife water quality objective in Urbanized Areas, listed by State.

Total CSO Treatment Capacity for Recreation: The total estimated CSO treatment capacity, in 1,000 m^3/day, required to meet the Recreation water quality objective in Urbanized Areas, listed by State.

Average CSO Unit Treatment Capacity for Recreation: The estimated average CSO unit treatment capacity, in 1,000 m^3/day/hectare, required to meet the Recreation water quality objective in Urbanized Areas, listed by State.

Total CSO Storage Capacity for Fish and Wildlife: The total estimated CSO storage capacity, in 1,000 m^3, required to meet the Fish and Wildlife water quality objective in Urbanized Areas, listed by State.

Average CSO Unit Storage Capacity for Fish and Wildlife: The estimated average CSO unit storage capacity, in 1,000 m^3/hectare, required to meet the Fish and Wildlife water quality objective in Urbanized Areas, listed by State.

Total CSO Storage Capacity for Recreation: The total estimated CSO storage capacity, in 1,000 m^3, required to meet the Recreation water quality objective in Urbanized Areas, listed by State.

Average CSO Unit Storage Capacity for Recreation: The estimated average CSO unit storage capacity, in 1,000 m^3/hectare, required to meet the Recreation water quality objective in Urbanized Areas, listed by State.

TABLE 66

AREA IN HECTARES
FLOW IN 1000 M3/DAY
VOLUME IN 1000 M3

1982 NEEDS SURVEY
SELECTED FACILITIES FOR CSO CONTROL IN URBANIZED AREAS BY STREAM USE OBJECTIVE

STATE	# OF	TOTAL			----------FISH & WILDLIFE--------				------------RECREATION----------			
					TREATMENT		STORAGE		TREATMENT		STORAGE	
	UA S	CSO AREA	PLANTS	BASINS	TOTAL	UNIT	TOTAL	UNIT	TOTAL	UNIT	TOTAL	UNIT
ALABAMA	9	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
ALASKA	1	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
AMERICAN SAMOA	0	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
ARIZONA	2	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
ARKANSAS	4	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
CALIFORNIA	18	12,732	6	10	448.57	0.0143	885.07	0.0282	897.13	0.0285	1,179.39	0.0375
COLORADO	4	6,480	3	5	0.00	0.0000	154.56	0.0097	39.47	0.0025	172.64	0.0108
CONNECTICUT	12	6,221	10	18	323.83	0.0211	848.08	0.0552	748.68	0.0487	2,513.96	0.1637
DELAWARE	1	2,809	2	4	136.89	0.0197	330.72	0.0477	376.45	0.0543	1,024.93	0.1478
DIST. OF COLUMBIA	1	5,939	3	5	290.38	0.0197	586.64	0.0399	798.55	0.0543	1,964.02	0.1335
FLORIDA	15	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
GEORGIA	7	10,693	10	18	403.86	0.0153	1,003.76	0.0370	818.89	0.0310	2,890.65	0.1095
GUAM	0	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
HAWAII	1	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
IDAHO	1	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
ILLINOIS	13	104,031	24	40	3,286.66	0.0128	9,960.31	0.0388	4,495.47	0.0175	14,549.69	0.0566
INDIANA	10	84,574	32	53	2,311.84	0.0111	9,160.98	0.0439	2,650.37	0.0127	14,367.28	0.0688
IOWA	7	1,822	3	6	90.03	0.0200	156.37	0.0348	106.06	0.0236	197.93	0.0440
KANSAS	4	11,380	6	10	498.84	0.0178	1,045.84	0.0372	623.92	0.0222	1,493.03	0.0531
KENTUCKY	6	14,083	6	10	635.97	0.0183	1,541.15	0.0443	1,393.20	0.0401	5,382.63	0.1548
LOUISIANA	7	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
MAINE	2	5,742	5	9	279.82	0.0197	645.96	0.0456	769.32	0.0543	2,004.08	0.1414
MARIANAS GROUP	0	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
MARYLAND	2	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
MASSACHUSETTS	11	21,561	15	26	1,219.12	0.0229	2,704.19	0.0508	2,934.23	0.0551	7,740.59	0.1454
MICHIGAN	13	90,443	22	37	2,300.08	0.0103	7,519.47	0.0337	3,893.76	0.0174	11,395.36	0.0510
MINNESOTA	6	9,259	5	9	337.36	0.0148	661.34	0.0289	393.86	0.0173	851.05	0.0373
MISSISSIPPI	3	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
MISSOURI	5	34,947	12	20	1,089.08	0.0126	3,341.14	0.0387	1,535.40	0.0178	4,923.58	0.0571
MONTANA	2	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
NEBRASKA	3	6,739	3	5	123.16	0.0074	288.99	0.0174	205.26	0.0123	437.75	0.0263
NEVADA	2	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
NEW HAMPSHIRE	3	2,597	3	6	139.23	0.0217	300.22	0.0468	375.91	0.0586	899.67	0.1403
NEW JERSEY	7	39,793	11	18	1,933.23	0.0197	4,983.67	0.0507	4,115.72	0.0419	15,007.23	0.1527
NEW MEXICO	1	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
NEW YORK	9	146,996	38	62	6,454.58	0.0178	13,862.32	0.0382	15,303.79	0.0422	50,443.48	0.1390
NORTH CAROLINA	11	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
NORTH DAKOTA	1	93	1	2	1.70	0.0074	2.60	0.0113	2.27	0.0099	3.19	0.0139
OHIO	17	75,372	36	61	2,699.25	0.0145	7,997.78	0.0430	3,938.56	0.0212	11,572.61	0.0622
OKLAHOMA	4	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
OREGON	3	10,133	4	7	555.53	0.0222	1,272.71	0.0509	1,419.70	0.0567	2,159.74	0.0863
PAC. TR. TERR.	0	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
PENNSYLVANIA	14	63,812	24	40	2,448.80	0.0155	7,239.90	0.0459	6,090.62	0.0387	22,276.06	0.1414
PUERTO RICO	4	432	1	2	282.69	0.1900	63.97	0.0412	481.72	0.4515	45.72	0.0429
RHODE ISLAND	2	4,805	3	5	234.17	0.0197	566.97	0.0478	585.43	0.0493	1,548.49	0.1305
SOUTH CAROLINA	5	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
SOUTH DAKOTA	2	2,160	2	4	39.47	0.0074	78.37	0.0147	52.63	0.0099	118.92	0.0223
TENNESSEE	6	5,551	5	9	250.49	0.0183	891.97	0.0651	535.23	0.0390	1,479.34	0.1079
TEXAS	28	1,891	2	4	46.08	0.0099	293.70	0.0629	46.08	0.0099	423.75	0.0907
UTAH	3	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
VERMONT	0	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
VIRGIN ISLANDS	0	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
VIRGINIA	8	8,527	7	12	351.28	0.0167	999.02	0.0475	814.07	0.0387	3,241.53	0.1540
WASHINGTON	6	23,567	10	17	1,020.51	0.0175	2,348.37	0.0404	2,281.40	0.0392	3,695.55	0.0635
WEST VIRGINIA	5	8,601	7	13	405.51	0.0191	865.00	0.0407	1,131.77	0.0533	2,839.54	0.1337
WISCONSIN	9	9,469	7	13	387.48	0.0166	745.81	0.0319	432.41	0.0185	1,003.24	0.0429
WYOMING	0	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
U.A. TOTALS	320	833,274	328	551	30,945.51		83,826.84		60,289.55		189,848.23	

TABLE 67

SELECTED FACILITIES FOR SWR CONTROL IN URBANIZED AREAS BY STREAM USE OBJECTIVE

Table 67 presents information which was developed as part of the cost estimating procedures for Categories V and VI of the 1982 Needs Survey. These urban stormwater pollution control data were developed for projected year 2000 conditions in Urbanized Areas as presented in Table 63. The storage and treatment requirements presented in Table 67 were estimated using the 1982 Needs Estimation Program (NEP82) for the Fish and Wildlife and Recreation water quality objectives. The Fish and Wildlife objective was based on eliminating low dissolved oxygen events (less than 2.0 mg/l) and insuring that Solids concentrations in stormwater would be less than or equal to background Solids concentration in the receiving water. The Recreation objective was based on scaling up the facilities required to meet the Fish and Wildlife objective such that a 95 percent removal of fecal coliform organisms would be obtained. A brief description of the basis for Category V and VI cost estimates is presented in Appendix B. The following items are contained in Table 67:

Number of Urbanized Areas: The total number of Urbanized Areas as defined in Appendix B, listed by State. This item is the same as presented in Table 63.

Stormwater Runoff Area (2000): The Urbanized Area, in hectares, which contributes stormwater runoff based on projected year 2000 population estimates, listed by State. This item is the same as presented in Table 63.

Number of Stormwater Treatment Plants: The total estimated number of stormwater treatment plants required to meet the Fish and Wildlife water quality objective in Urbanized Areas, listed by State.

Number of Stormwater Storage Basins: The total estimated number of stormwater storage basins required to meet the Fish and Wildlife water quality objective in Urbanized Areas, listed by State.

Total Stormwater Treatment Capacity for Fish and Wildlife: The total estimated stormwater treatment capacity, in 1,000 m^3/day, required to meet the Fish and Wildlife water quality objective, listed by State.

Average Stormwater Unit Treatment Capacity for Fish and Wildlife: The estimated average stormwater unit treatment capacity, in 1,000 m^3/day/hectare, required to meet the Fish and Wildlife water quality objective, listed by State.

Total Stormwater Treatment Capacity for Recreation: The total estimated stormwater treatment capacity, in 1,000 m^3/day, required to meet the Fish and Wildlife water quality objective, listed by State.

Average Stormwater Unit Treatment Capacity for Recreation: The average estimated stormwater unit treatment capacity, in 1,000 m^3/day/hectare, required to meet the Recreation water quality objective, listed by State.

Total Stormwater Storage Capacity for Fish and Wildlife: The total estimated stormwater storage capacity, in 1,000 m^3, required to meet the Fish and Wildlife water quality objective, listed by State.

Average Stormwater Unit Storage Capacity for Fish and Wildlife: The average estimated stormwater unit storage capacity, in 1,000 m^3/day/hectare, required to meet the Fish and Wildlife water quality objective, listed by State.

Total Stormwater Storage Capacity for Recreation: The total estimated stormwater storage capacity, in 1,000 m^3, required to meet the Recreation water quality object, listed by State.

Average Stormwater Unit Storage Capacity for Recreation: The average estimated stormwater unit storage capacity, in 1,000 m^3/hectare, required to meet the Recreation water quality objective, listed by State.

TABLE 67

AREA IN HECTARES
FLOW IN 1000 M3/DAY
VOLUME IN 1000 M3

1982 NEEDS SURVEY
SELECTED FACILITIES FOR CSO CONTROL IN URBANIZED AREAS BY STREAM USE OBJECTIVE

STATE	# OF UA S	TOTAL SWR AREA	PLANTS	BASINS	FISH & WILDLIFE				RECREATION			
					TREATMENT		STORAGE		TREATMENT		STORAGE	
					TOTAL	UNIT	TOTAL	UNIT	TOTAL	UNIT	TOTAL	UNIT
ALABAMA	9	244,859	53	84	11,441.63	0.0189	35,478.88	0.0587	20,799.27	0.0344	63,897.63	0.1057
ALASKA	1	50,978	8	13	310.53	0.0025	1,267.63	0.0101	621.07	0.0049	2,004.92	0.0159
AMERICAN SAMOA	0	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
ARIZONA	2	322,597	26	40	1,608.37	0.0020	4,248.86	0.0053	1,965.10	0.0025	4,643.27	0.0058
ARKANSAS	4	84,967	20	32	3,807.42	0.0181	10,469.60	0.0499	5,908.50	0.0282	19,943.22	0.0951
CALIFORNIA	18	1,411,007	141	221	19,013.75	0.0055	54,561.60	0.0157	41,708.33	0.0120	100,651.64	0.0289
COLORADO	4	204,920	27	43	955.85	0.0019	3,662.52	0.0072	1,336.10	0.0026	4,405.12	0.0087
CONNECTICUT	12	240,587	64	102	8,777.01	0.0148	25,743.59	0.0433	22,432.82	0.0378	83,368.35	0.1403
DELAWARE	1	38,011	7	11	1,389.28	0.0148	4,658.44	0.0496	3,704.74	0.0395	14,197.14	0.1513
DIST. OF COLUMBIA	1	26,058	6	10	952.39	0.0148	2,995.13	0.0466	2,539.69	0.0395	9,362.25	0.1455
FLORIDA	15	1,047,544	132	206	52,527.04	0.0203	139,270.05	0.0538	99,250.71	0.0384	278,478.30	0.1077
GEORGIA	7	293,120	44	70	13,065.32	0.0181	33,328.75	0.0460	20,826.18	0.0288	64,233.84	0.0888
GUAM	0	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
HAWAII	1	56,681	9	14	690.54	0.0049	2,531.21	0.0181	2,416.89	0.0173	5,522.63	0.0395
IDAHO	1	15,599	5	8	190.05	0.0049	740.17	0.0192	190.05	0.0049	783.71	0.0203
ILLINOIS	13	412,410	68	109	10,072.85	0.0099	30,520.12	0.0300	13,128.50	0.0129	41,947.06	0.0412
INDIANA	10	250,627	47	76	7,813.67	0.0126	24,177.78	0.0391	10,364.29	0.0167	32,874.84	0.0531
IOWA	7	134,322	37	59	2,645.91	0.0080	8,344.49	0.0252	3,295.34	0.0049	11,020.56	0.0342
KANSAS	4	304,382	31	49	5,391.98	0.0072	15,809.18	0.0210	7,243.66	0.0096	21,529.54	0.0286
KENTUCKY	6	139,237	28	45	4,523.23	0.0132	14,246.43	0.0414	12,042.25	0.0350	44,679.84	0.1300
LOUISIANA	7	131,642	35	56	6,734.42	0.0207	21,162.15	0.0651	12,505.66	0.0385	37,780.10	0.1162
MAINE	2	62,094	14	22	1,710.13	0.0110	4,262.40	0.0275	4,981.62	0.0322	17,759.98	0.1147
MARIANAS GROUP	0	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
MARYLAND	2	198,109	22	34	9,654.25	0.0197	23,788.22	0.0486	20,411.05	0.0417	72,683.94	0.1486
MASSACHUSETTS	11	394,969	66	105	13,711.85	0.0141	43,675.17	0.0448	38,662.52	0.0396	130,963.63	0.1343
MICHIGAN	13	358,151	68	109	10,648.46	0.0123	33,528.40	0.0379	13,104.53	0.0148	42,570.49	0.0481
MINNESOTA	4	276,526	28	45	3,305.63	0.0048	12,091.11	0.0177	4,966.06	0.0073	16,520.85	0.0242
MISSISSIPPI	3	48,402	14	23	2,142.44	0.0179	6,118.38	0.0512	4,098.22	0.0343	12,727.92	0.1065
MISSOURI	5	257,508	35	55	6,693.18	0.0105	22,528.73	0.0354	9,194.37	0.0145	29,353.64	0.0462
MONTANA	2	16,824	7	12	102.48	0.0025	332.36	0.0080	102.48	0.0025	351.18	0.0085
NEBRASKA	3	56,837	13	21	686.67	0.0049	1,797.89	0.0128	686.67	0.0049	2,390.25	0.0170
NEVADA	2	96,192	15	24	0.00	0.0000	1,279.39	0.0054	585.95	0.0025	1,464.44	0.0062
NEW HAMPSHIRE	3	161,263	23	36	4,945.23	0.0124	14,968.03	0.0376	12,168.06	0.0306	44,014.66	0.1105
NEW JERSEY	7	805,369	52	82	33,814.65	0.0170	76,978.38	0.0387	86,315.31	0.0434	244,097.99	0.1228
NEW MEXICO	1	49,964	8	13	0.00	0.0000	709.93	0.0058	304.36	0.0025	760.66	0.0062
NEW YORK	9	167,292	43	69	5,235.38	0.0127	17,000.86	0.0412	13,304.85	0.0322	49,416.95	0.1196
NORTH CAROLINA	11	198,900	56	90	7,186.79	0.0146	23,055.49	0.0469	12,304.98	0.0251	42,368.46	0.0863
NORTH DAKOTA	1	5,277	3	5	32.15	0.0025	113.81	0.0087	32.15	0.0025	168.71	0.0129
OHIO	17	582,692	96	150	17,252.16	0.0120	51,226.56	0.0356	24,060.41	0.0167	76,869.21	0.0534
OKLAHOMA	4	209,548	27	43	2,922.33	0.0056	8,256.62	0.0160	2,928.46	0.0057	10,753.74	0.0208
OREGON	3	136,455	22	35	6,061.77	0.0180	18,104.42	0.0537	13,542.75	0.0402	29,894.68	0.0887
PAC. TR. TERR.	0	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
PENNSYLVANIA	14	434,788	72	115	16,709.69	0.0156	42,481.29	0.0396	39,918.37	0.0372	137,675.49	0.1282
PUERTO RICO	4	52,561	17	28	2,095.48	0.0161	6,880.29	0.0530	3,956.82	0.0305	13,593.40	0.1047
RHODE ISLAND	2	47,513	10	16	1,466.03	0.0125	4,861.39	0.0414	4,051.96	0.0345	15,657.80	0.1335
SOUTH CAROLINA	5	104,132	26	42	3,778.33	0.0147	12,849.07	0.0500	7,220.79	0.0281	22,742.12	0.0885
SOUTH DAKOTA	2	10,372	5	9	60.72	0.0024	208.29	0.0081	63.18	0.0025	310.79	0.0121
TENNESSEE	6	275,565	43	68	11,271.06	0.0166	34,284.75	0.0504	21,099.34	0.0310	62,419.56	0.0917
TEXAS	28	1,775,360	201	316	28,329.69	0.0065	92,989.37	0.0212	38,748.10	0.0088	123,780.88	0.0282
UTAH	3	96,392	18	29	418.17	0.0018	1,378.81	0.0058	615.16	0.0026	2,234.03	0.0094
VERMONT	0	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
VIRGIN ISLANDS	0	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
VIRGINIA	8	399,232	57	90	14,449.62	0.0147	40,253.46	0.0408	33,244.82	0.0337	119,342.40	0.1211
WASHINGTON	6	244,164	38	60	8,747.40	0.0145	25,156.55	0.0417	17,856.44	0.0296	39,964.08	0.0663
WEST VIRGINIA	5	32,784	15	25	1,053.79	0.0130	3,361.74	0.0415	2,601.10	0.0321	10,232.62	0.1264
WISCONSIN	9	266,233	50	80	5,409.30	0.0082	16,587.95	0.0252	8,269.70	0.0126	25,920.87	0.0394
WYOMING	0	0	0	0	0.00	0.0000	0.00	0.0000	0.00	0.0000	0.00	0.0000
U.A. TOTALS	320	10,231,622	252	383	371,806.08		1,074,325.71		721,679.74		2,240,329.37	

APPENDIX A

THE 1982 NEEDS SURVEY

CONDUCT OF THE SURVEY - CATEGORIES I THROUGH IV (TREATMENT PLANTS AND SEWERS)

BACKGROUND

As in previous Surveys, the goal of the 1982 Needs Survey was to identify and quantify all needs on a nationally uniform basis. Further, the inventory of municipal wastewater facilities compiled previously would be updated and expanded for completeness.

As in the 1976, 1978, and 1980 Surveys, the 1982 Survey was accomplished with the assistance of a contractor. The two main purposes for performing the Survey with contractor assistance were:

1. To achieve as high a degree of national consistency in the final estimates as possible through the use of uniformly applied guidelines and validation techniques.
2. To minimize the resources required of State and EPA Regional construction grants staff.

URS Company of Denver, Colorado was competitively selected to perform the Needs Survey. CH2M HILL, Inc. of Gainesville, Florida and Sage Murphy & Associates, Inc. of Denver, Colorado assisted in the Survey as subcontractors to URS.

CONDUCT OF THE SURVEY

The 1982 Needs Survey was a more centralized effort than past Surveys. All data analysis was performed in Denver, Colorado to assure national consistency in the estimation process. Contractor personnel visited EPA Regional and State offices as necessary for data collection and consultation.

Survey guidance and methodology were formulated for Categories I-IV and circulated to all parties involved in the Survey. The guidance document was prepared as an update to the guidance used in prior Surveys.

The formal Survey of Categories I-IV began with orientation meetings conducted in EPA Regional offices where logistics, target dates, and individual State problems were discussed and resolved. States were invited to provide as much investment in personnel for the Survey as they considered prudent.

The Survey field work was conducted in the fall of 1981 and the spring of 1982. As estimates for Categories I-IV were completed, copies of the estimates were reviewed by States on a facility-by-facility basis. In a few cases, separate cost estimates were submitted by States when agreement between EPA and State personnel could not be reached.

Population projections from the Bureau of Economic Analysis for the year 2000 were used as State ceilings. State population projection totals were not permitted to exceed these ceilings.

Facility estimates were reviewed and accepted and/or approved at four levels:

1. Contractor.

2. State.

3. EPA Regional office.

4. EPA Headquarters.

After updating the Needs Survey computer data base with 1982 Survey information, data for Categories I-IV were summarized for this report.

SURVEY METHODOLOGY

Participant guidance for the Survey was formulated by EPA, the States, and the contractor to insure national uniformity in needs assessment while recognizing cost and construction differences inherent to various sections of the country. Set forth in the guidance were directives outlining:

1. Responsibilities.

2. Survey chronology, including target dates, for project milestones.

3. Descriptions of types of data sources.

4. Instructions for review of individual facilities by contractor personnel and adjustments to the 1980 data of record.

5. Provisions for State and Regional review of Survey forms.

6. Definitions of terms for Survey purposes such as levels of treatment, design year, and per capita flows.

7. Detailed cost estimating backlog needs for all categories.

8. Local construction cost indices.

9. Treatment plant, sewer, and pump station sizing and cost estimating tables.

BASIS OF COST ESTIMATE FOR CATEGORIES I-IV

All individual cost estimates prepared or obtained for Categories I-IV of the Survey were assigned a basis that provides an indication of the quality of the estimate. The quality of cost estimates are assigned codes which are defined as follows:

1. State Certification. Applicable to Category IIIA only, this code relates to certification by the State that excessive I/I does or does not exist. It was not used in this Survey as a basis of estimate.
2. Analysis Completed. For Category IIIA estimates obtained from a cost analysis in an I/I report.
3. Evaluation Survey Completed. An estimate of cost based on the results of a Sewer System Evaluation Survey (SSES) used only for Category IIIA and IIIB.
4. Engineer/Consultant Firm Estimate. An estimate of cost based on detailed engineering work such as completed Step 2 plans and specifications.
5. Cost of Previous Comparable Construction. This estimate of cost is based on the cost of a nearby, recently completed project which is similar in size and scope and for which detailed construction cost data are available.
6. Engineer/Consultant Preliminary Estimate. An estimate of cost based on a completed Step 1 or other facilities plan.
7. EPA Supplied Cost Estimating Procedures. Costs estimated using EPA rule of thumb estimating techniques as described in the Survey guidance.
8. Cost Effective Analysis. This is an estimate derived from comparative economic evaluation for which a completed Step 1 facilities plan is not available, or a rough estimate obtained from a 208 or other areawide plan.

The accuracy of the cost estimates can be ranked from high order to low, as follows:

Categories I, IIA, IIB, IVA, IVB: Codes 4, 6, 5, 8, 7

Categories IIIA, IIIB: Codes 4, 3, 6, 2, 8, 5, 7, 1

CATEGORY I-IV DATA COLLECTION

Many sources of data were used in assessing and updating needs for individual facilities. For most of these facilities, information was obtained concerning present and projected population, flows, treatment plant loadings, discharge limitations, and treatment and sludge handling methods. The data sources included:

1. 1980 Needs Survey.
2. NPDES permits.
3. Regional grant files.
4. Engineering plans and reports.

5. EPA Grants Information and Control System (GICS) data.

6. State water quality standards.

SURVEY PREPARATION

The 1982 Survey form for each facility was generated by computer showing the 1980 data of record. Revised or updated cost estimates and related information were obtained for each facility as applicable and entered on the form by computer. Updated forms were then sent to the States and EPA Regional offices for review. Upon completion of the review, final changes were made to the form and the information was entered into the 1982 Survey data base.

The 1982 Needs Survey was noteworthy for its increased level of automation, efficiency, and accuracy over prior Surveys. The Survey data base was expanded somewhat by the addition of new facilities and existing data were improved. The final results of the Survey reported herein represent a higher degree of reliability and accuracy with the accumulation of more data on the nation's wastewater systems than has ever before been known.

APPENDIX B

CONDUCT OF THE SURVEY - CATEGORIES V AND VI
COMBINED SEWER OVERFLOW (CSO) AND URBAN STORMWATER RUNOFF (SWR)

BACKGROUND

Prior to the 1982 Needs Survey, Categories V and VI needs were computed for three levels of receiving water quality: (1) Aesthetics, (2) Fish and Wildlife, and (3) Recreation. However, the needs reported to Congress were based on the Recreation control level which is the most costly. In the 1982 Needs Survey, Categories V and VI needs were computed for an additional level of control termed the Public Health level. Furthermore, the needs reported to Congress were based on the designated receiving water use for each individual facility in the case of Category V needs and for each individual Urbanized Area in the case of Category VI needs. That is, the basis of estimate varied on a facility-by-facility basis based on designated receiving water use, as defined by State stream use classification.

BASIS OF COST ESTIMATES FOR CATEGORIES V AND VI

The needs estimation procedure utilized for Categories V and VI during the 1982 Survey was very similar to the procedure utilized during the 1980 Survey. The ten combined sewer site studies conducted as part of the 1980 Needs Survey were used to develop transferable criteria, principles, and relationships which were applied nationwide to estimate wet-weather POTW needs. These relationships and criteria, along with updated construction cost functions, were incorporated into the Categories V and VI Needs Estimation Program (NEP82) which developed needs estimates for each Urbanized Area in the United States.

Approximately 27 percent of the total national combined sewer area is located in small towns and cities outside of census-defined Urbanized Areas. Category V needs were estimated for these facilities by application of linear regression equations derived from population, drainage area, and Category V cost data developed for the Urbanized Areas. That is, Category V needs were expressed as a linear function of combined sewer service area and population served, and these functions were utilized to establish Category V needs estimates for combined sewer systems located in non-Urbanized Areas.

Categories V and VI cost estimates were developed for four receiving water use objectives: (1) Aesthetics, (2) Public Health, (3) Fish and Wildlife, and (4) Recreation. The Aesthetics objective is based on obtaining a 40 percent removal of BOD_5 and Solids using an optimum combination of best management practices and storage/treatment systems. The Public Health objective is based on elimination of 90 percent of the fecal coliform bacteria generated by wet-weather flows. The Fish and Wildlife objective is based on eliminating low dissolved oxygen events, i.e., less than 2.0 mg/l, and insuring that Solids concentrations in the combined sewer overflow are less than or equal to background Solids concentrations in the receiving water. The Recreation objective is based on scaling up the facilities required to meet the fish and wildlife objective such that a 95 percent removal of fecal coliform organisms is obtained.

The final needs estimate reported to Congress for Category V facilities was based on the results of the needs estimation procedure outlined above, including the State designated receiving water used or on acceptable facilities planning documents. If acceptable facilities planning information was available for a given facility, then cost estimates derived from these documents were used as the Category V basis of estimate for that facility. However, in the majority of cases such information was not available and the cost estimate generated by NEP82 for the control level necessary to protect the State designated receiving water use is reported.

COMBINED SEWER SYSTEM DATA FILE

The inventory of combined sewer systems in the U.S. was updated during the 1982 Needs Survey using the combined sewer system worksheet described in Appendix D. The combined sewer data collection process was performed in conjunction with all other data collection for the 1982 Survey. A total of 1,081 worksheets were completed to the extent possible with readily available data. Since not all data items on the worksheet are readily available from published reports, the data file is not complete for each worksheet. The worksheet is segmented into five major sections as follows:

1. Identification and combined sewer system data.

2. Receiving water characteristics.

3. Status of CSO abatement projects.

4. Grant information.

5. Grant eligible cost estimates.

Data from Sections 1 and 2 of the worksheets for the 1982 Needs Survey are summarized in Tables 61 and 62 of Chapter IV.

URBANIZED AREA DATA BASE

The Urbanized Area Data Base is a subset of the Combined Sewer System Data File. In the regulations for the application of the NPDES Permit Program to separate storm sewers, the term "separate storm sewer" is defined as a conveyance or system of conveyances . . . located in an Urbanized Area and primarily operated for the purpose of collecting and conveying stormwater runoff (1). Based on this definition, the Urbanized Areas, as designated by the U.S. Bureau of the Census, are used as the geographical areas which require control and/or treatment of urban stormwater runoff. Therefore, needs estimation for both Categories V and VI are required within Urbanized Areas.

The specific criteria for the delineation of an Urbanized Area are as follows:

1. A central city of 50,000 inhabitants or more, or twin cities with a combined population of at least 50,000 with the smaller of the twin cities having a population of at least 15,000.

2. Surrounding closely settled territory, including the following:
   - a. Incorporated places of 2,500 inhabitants or more.
   - b. Incorporated places with fewer than 2,500 inhabitants, providing that each has a closely settled area of 100 housing units or more.
   - c. Small parcels of land normally less than one square mile in area having a population density of 1,000 inhabitants or more per square mile.
   - d. Other similar small areas in unincorporated territory with lower population density provided that they serve to eliminate enclaves, or to close indentations in the Urbanized Areas of one mile or less across the open end, or to line outlying enumeration districts of qualifying density that are not more than 1-1/2 miles from the main body of the Urbanized Area.

As of January 1, 1978, there were 279 Urbanized Areas defined in the nation. Thirty-five of the Urbanized Areas encompassed area in two or more States. By subdividing the Urbanized Areas encompassing lands in more than one State into separate Urbanized Areas for each State, a total of 320 Urbanized areas were defined for estimation of Category V and VI needs.

The Urbanized Area Data Base consists primarily of the following items, some of which were obtained from the National Combined Sewer System Data File and the remainder from other published sources:

1. Demographic Data. The items in this category are the combined sewer service area and the population served by combined sewers, the Urbanized Area population and size, the year 1970 SMSA population, the year 2000 SMSA population estimate, and the citywide EPA construction cost factor.
2. Hydrologic Data. The items in this category are the number of days with rain per year, the mean annual rainfall, the receiving water classification, the mean annual flow of the receiving water, and the natural runoff coefficient.
3. Water Quality Data. The items in this category are maximum monthly receiving water temperature, background BOD, Solids, lead, hardness, alkalinity, and pH of the receiving water.

SOURCES OF DATA

Sources of data for the National Combined Sewer System Data File included the following:

1. NPDES files in EPA Regional offices.
2. USGS water resources data.
3. Grants files.
4. 201 plans.

5. 208 plans.

6. Telephone contact with municipalities.

Sources of data for the Urbanized Area Data Base are given as follows:

1. Demographic Data.
    a. The combined sewer service area and the population served by the combined sewers were taken from the National Combined Sewer System Data File for those systems located within Urbanized Areas.
    b. Urbanized Area population and size were reported in the supplementary report of the 1970 census of population (2).
    c. 1970 SMSA population was reported in the "Current Population Reports Series" (3).
    d. Year 2000 SMSA population estimates were reported from the U.S. Water Resources Council's OBERS Projections (4).
    e. Citywide EPA construction cost factors were taken from EPA Municipal Construction Cost Index map, wastewater treatment plants, and City multipliers.
2. Hydrologic Data.
    a. The number of days with rain per year and the mean annual rainfall were obtained from the National Oceanic and Atmospheric Administration (5).
    b. Receiving water data were obtained from the National Combined Sewer System Data File and from USGS Water Resources data.
    c. Natural runoff coefficients were obtained from USGS Water Supply Paper 1797 - "Has the United States Enough Water?" (6).
3. Water Quality Data. Background water quality data were obtained from the Assessment of Water Pollution from Nonpoint Sources (7).

REFERENCES

1. Federal Register, 40 CFR Parts 124, 125, National Pollutant Discharge Elimination System - Separate Storm Sewers, Final Regulations. 18 March 1976.
2. Supplemental Report, 1970 Census of Population, PC (S7)-106. Population of Urbanized Areas Established in the 1970 Census for the United States. 1970.
3. Population Estimates and Projections, P-25, No. 709. Estimates of the Population of Counties and Metropolitan Areas. 1 July 1974 and 1975.
4. U.S. Water Resources Council, 1972, OBERS Projections of Economic Activity in the U.S., Volume IV - States, Volume V - Standard Metropolitan Statistical Areas, Washington, D.C.
5. U.S. Department of the Interior, Geological Survey, "Water Resources Data for the United States." Published annually for each State.
6. Piper, A. M. "Has the United States Enough Water?" U.S. Geological Survey Water Supply Paper 1797. U.S. Government Printing Office, Washington, D.C.
7. McElroy, A. D., et.al. "Loading Functions for Assessment of Water Pollution from Nonpoint Sources," EPA 600/2-76/151. May 1976.

APPENDIX C

THE 1982 NEEDS SURVEY
DESCRIPTION OF THE 1982 SURVEY FORM

The principal instrument of the 1982 Needs Survey was the EPA-1 form shown on Figures C.1 and C.2. The updated 1980 Survey data of record were printed on this form and copies distributed to cognizant Federal, State, and contractor personnel. One form was completed for each facility identified in the 1980 Needs Survey. The data of record were then updated in accordance with the methodology presented in Appendix A.

The form is designed to allow a large quantity of data to be compiled for each sewerage facility. This is made possible by an elaborate data coding system which allows a huge quantity of data to be entered in a compact form and permits it to be easily checked by computer for accuracy and completeness. The codes used to complete each item on the form (Figure C.1) are defined on the reverse side of the form (Figure C.2).

Listed below is a brief explanation of each item on the 1982 Needs Survey EPA-1 form:

1. State/Authority/Facility Number: This is a discrete nine digit number assigned to each facility. The first two digits designate a particular State or Territory and are obtained from the Federal Information Processing Standard for designating States and outlying areas of the U.S. (FIPS-5).

   The next four numbers designate a particular municipal sewerage authority and are assigned sequentially by each State. The last three digits designate a particular sewerage facility and are assigned sequentially by each municipal sewerage authority.

2. Facility Name: The official name of the facility.

3. Authority Name: The name of the authority having responsibility for the facility.

4. Zip Code: The official postal service zip code of the facility.

5. Submission Code: This is a one digit number which indicates whether the need of the facility changed since the 1980 Survey, or whether the facility was even included in the 1980 Survey.

6. Stream Use: One to three stream use classification codes are entered in this block corresponding to the stream receiving the municipal wastewater discharge. The stream use codes are matched to classifications designated by the State.

7. Eligibility: An "X" in the first block indicates that the facility is eligible for Farmers Home Administration financial assistance. An "X" in the second block indicates that the facility is eligible for Economic Development Administration financial assistance. A "Y" or

"N" for yes or no in the third block indicates if funding for the facility has been provided under the Clean Water Act. A "Y" or "N" in the fourth block of Item 7 indicates if pretreatment of industrial flow is required for this facility.

8. NPDES NUMBER: The National Pollutant Discharge Elimination System (NPDES) permit number assigned to the facility through the EPA permit program.

9. County Number: The three digit FIPS-6 number used to identify the county in which the facility is located.

10. SMSA Number: The number of the Standard Metropolitan Statistical Area (SMSA) in which the facility is located.

11. Reach Number: A number designating the river reach in which the facility discharges according to nationwide stream segment classifications developed by EPA.

12. Congressional District: The number of the Congressional district in which the facility is located.

13. Comment Codes: Four spaces are provided for one digit codes which represent standardized comments that explain anomalies present in the coding convention used to describe the facility. The standard comments are listed on the reverse side of the form. Space is also provided on the reverse side for writing more extensive comments.

14. City: The name of the community in which the facility is located.

15. County: The name of the county in which the facility is located.

16a. Facility Status: A one digit code which indicates whether or not a facility is currently in operation.

16b. Present Nature of Facility: A one digit code which describes the present type of facility in operation. The codes are defined on the reverse side of the form.

16c. Projected Nature of Facility: A one digit code which describes the type of facility projected to be in operation in 2000. The codes are defined on the reverse side of the form.

16d. Projected Change: A one digit code which describes any physical changes expected at the facility by 2000. The codes are defined on the reverse side of the form.

16e. Start Up Date: The month and year a facility became, or is expected to become, operational.

16f. Abandonment Date: The month and year a facility will be abandoned, if applicable.

17. Summary of Category Needs: This section is used to record the costs of Categories I-IVB. Column (a) is for the EPA assessment. Column (b) is for the State assessment, if different from (a). Column (c) is the portion required to satisfy backlog facility requirements. Backlog refers to the facility requirements based on the 1980 population rather than the 2000 population. Column (d) is used to record the basis of estimation for the dollar amounts recorded in Column (a). Column (e) is used to record the reason the State submitted a separate State estimate in Column (b), if applicable. The codes for the basis of estimation used in Columns (d) and (e) are defined on the reverse side of the form.

18. Facility Population: This section shows the population which receives treatment and/or collection by the facility. Collection and treatment populations are further categorized as follows: present residents, present nonresidents, projected residents, and projected nonresidents.

19. Need for New Collectors, Interceptors, Force Mains, and Pumping Stations: This section lists codes for required new collectors, interceptors, outfalls, force mains, and pumping stations and their costs. The diameter of the pipe is shown in inches. The capacity of pumping stations is shown in million gallons per day (mgd).

20. Disposal of Liquid Effluents: A one digit code is entered in each of the three Columns (a, b, and c) to describe the method(s) of effluent disposal used by the facility. The code in Column (a) describes the method. The code in Column (b) describes the operational status. The code in Column (c) describes the expected physical change. All codes are defined on the reverse side of the form.

21. Required Infiltration/Inflow Corrective Action: A one digit code indicating the required action to eliminate excessive I/I, if applicable.

22. Estimated I/I Flow: The quantity of I/I flow (mgd) to be eliminated by the corrective action indicated in Item 21.

23. Major Rehabilitation/Replacement Required: A one digit code for the type of corrective action required to accomplish major rehabilitation or replacement of a portion of a sewerage system, if applicable.

24. Do Wastewaters Originate in Communities Existing Before October 18, 1972?: This item is self-explanatory and is answered yes or no.

25. 1972 Collection Population: The resident population in existence in 1972 which still requires new collector sewers.

26. Effluent Characteristics: A one digit code indicating the present and future effluent characteristics (primary, secondary, etc.) a facility is designed to produce.

27. Reasons: A one digit code indicating the reason for any facility being designed to achieve a greater than secondary level of treatment.

28. Supplemental Sheets: A one digit code indicating the use of an additional data collection sheet to list specialized information about the facility.

29. Flows, Concentrations, Monthly Average: This section is used for compiling information on the present performance and design values for treatment facilities. Listed are the monthly averages for various parameters according to the existing actual performance, the present design, and the projected design. Data are compiled for the following parameters (if applicable): Total flow (mgd); total industrial flow (mgd); domestic flow per capita (gallons per day); and influent and effluent concentrations of five day biochemical oxygen demand (BOD_5), suspended solids (Solids), phosphorus, and ammonia.

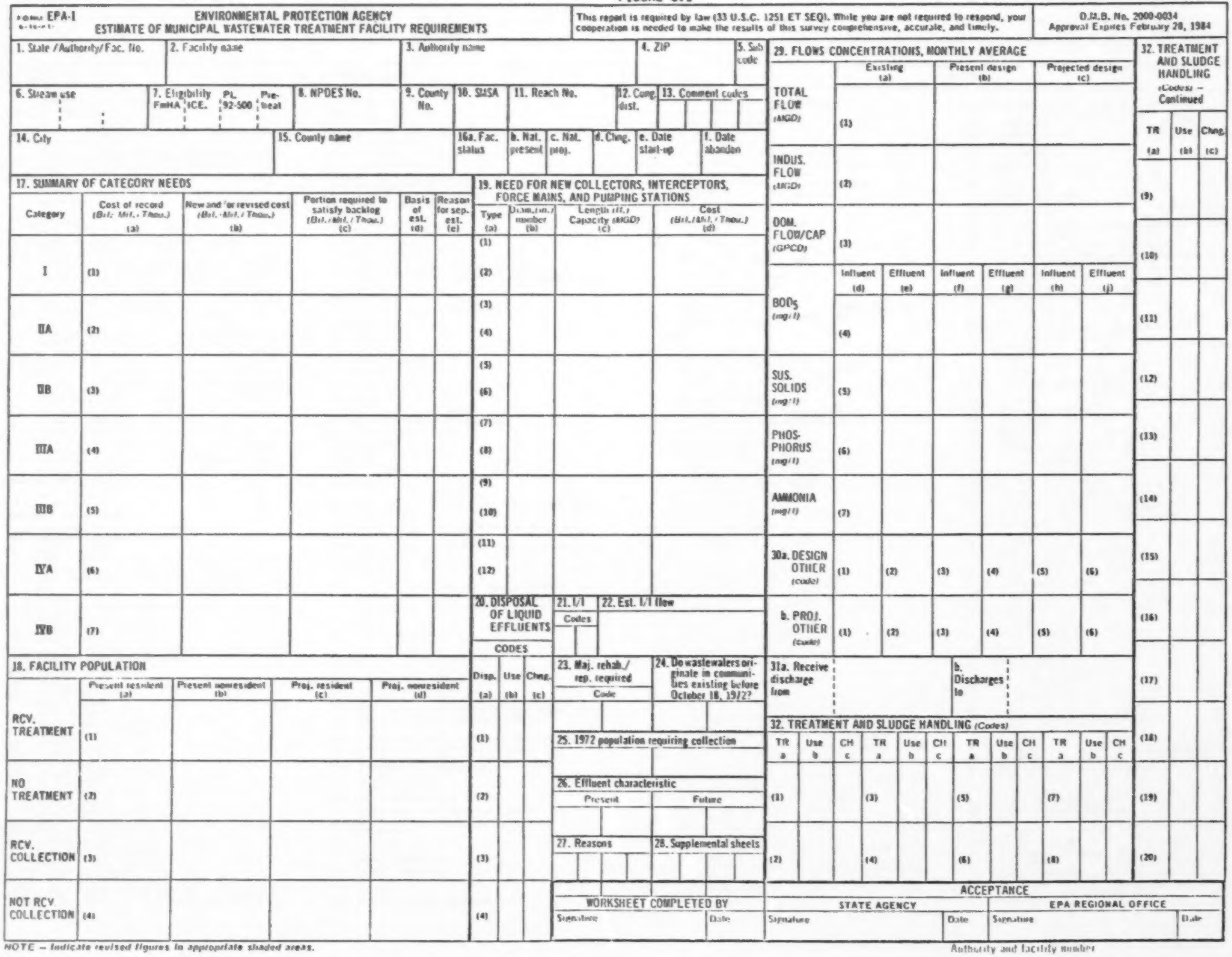
30. Other: A three digit code is used in Item 30a to indicate the presence of up to six known toxics in the influent to a treatment facility. The codes for toxics are listed in the technical guidance document. Similar codes are entered in Item 30b for toxics projected to be in the influent in the future.

31a. Receives Discharge From: If the facility receives flows from another facility, the authority/facility number of the other facility is entered in item 31a.

31b. Discharges To: If the facility discharges flows to another facility, the authority/facility number of the other facility is entered in item 31b.

32. Treatment and Sludge Handling: This section is used to compile information about the unit processes at the facility. An appropriate code is entered in each of the three Columns (a, b, and c) to describe a particular unit process. The code in Column (a) describes the process. The code in Column (b) describes the operational status of the process. The code in Column (c) describes the expected physical change to the process. All codes are listed on the reverse side of the form.

FIGURE C.1



FORM EPA-1

ENVIRONMENTAL PROTECTION AGENCY
ESTIMATE OF MUNICIPAL WASTEWATER TREATMENT FACILITY REQUIREMENTS

This report is required by law (33 U.S.C. 1251 ET SEQ). While you are not required to respond, your cooperation is needed to make the results of this survey comprehensive, accurate, and timely.

O.M.B. No. 2000-0034
Approval Expires February 28, 1984

1. State /Authority/Fac. No.
2. Facility name
3. Authority name
4. ZIP
5. Sub code
6. Stream use
7. Eligibility FmHA ICE. PL 92-500 Pre-treat
8. NPDES No.
9. County No.
10. SMSA
11. Reach No.
12. Cong. dist.
13. Comment codes
14. City
15. County name
16a. Fac. status
b. Nat. present
c. Nat. proj.
d. Chng.
e. Date start-up
f. Date abandon

17. SUMMARY OF CATEGORY NEEDS

Category	Cost of record *(Bil./Mil./Thou.)* (a)	New and/or revised cost *(Bil./Mil./Thou.)* (b)	Portion required to satisfy backlog *(Bil./Mil./Thou.)* (c)	Basis of est. (d)	Reason for sep. est. (e)
I	(1)				
IIA	(2)				
IIB	(3)				
IIIA	(4)				
IIIB	(5)				
IVA	(6)				
IVB	(7)				

19. NEED FOR NEW COLLECTORS, INTERCEPTORS, FORCE MAINS, AND PUMPING STATIONS

Type (a)	Diam.(in.)/number (b)	Length (ft.)/Capacity (MGD) (c)	Cost *(Bil./Mil./Thou.)* (d)
(1)			
(2)			
(3)			
(4)			
(5)			
(6)			
(7)			
(8)			
(9)			
(10)			
(11)			
(12)			

18. FACILITY POPULATION

	Present resident (a)	Present nonresident (b)	Proj. resident (c)	Proj. nonresident (d)
RCV. TREATMENT	(1)			
NO TREATMENT	(2)			
RCV. COLLECTION	(3)			
NOT RCV COLLECTION	(4)			

20. DISPOSAL OF LIQUID EFFLUENTS

CODES		
Disp. (a)	Use (b)	Chng. (c)
(1)		
(2)		
(3)		
(4)		

21. I/I Codes
22. Est. I/I flow
23. Maj. rehab./rep. required Code
24. Do wastewaters originate in communities existing before October 18, 1972?
25. 1972 population requiring collection
26. Effluent characteristic Present Future
27. Reasons
28. Supplemental sheets

WORKSHEET COMPLETED BY
Signature
Date

29. FLOWS CONCENTRATIONS, MONTHLY AVERAGE

	Existing (a)	Present design (b)	Projected design (c)
TOTAL FLOW *(MGD)*	(1)		
INDUS. FLOW *(MGD)*	(2)		
DOM. FLOW/CAP *(GPCD)*	(3)		

	Influent (d)	Effluent (e)	Influent (f)	Effluent (g)	Influent (h)	Effluent (j)
BOD$_5$ *(mg/l)*	(4)					
SUS. SOLIDS *(mg/l)*	(5)					
PHOSPHORUS *(mg/l)*	(6)					
AMMONIA *(mg/l)*	(7)					
30a. DESIGN OTHER *(code)*	(1)	(2)	(3)	(4)	(5)	(6)
b. PROJ. OTHER *(code)*	(1)	(2)	(3)	(4)	(5)	(6)

31a. Receive discharge from
b. Discharges to

32. TREATMENT AND SLUDGE HANDLING *(Codes)*

TR a	Use b	CH c	TR a	Use b	CH c	TR a	Use b	CH c	TR a	Use b	CH c
(1)			(3)			(5)			(7)		
(2)			(4)			(6)			(8)		

32. TREATMENT AND SLUDGE HANDLING *(Codes)* – Continued

TR (a)	Use (b)	Chng. (c)
(9)		
(10)		
(11)		
(12)		
(13)		
(14)		
(15)		
(16)		
(17)		
(18)		
(19)		
(20)		

ACCEPTANCE

STATE AGENCY		EPA REGIONAL OFFICE	
Signature	Date	Signature	Date

NOTE – Indicate revised figures in appropriate shaded areas.

Authority and facility number

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CODE REFERENCE CHART

Item 5 – Submission Codes
- 1 – No change from 1980
- 2 – Facility not reported in 1980
- 3 – Change from 1980

Item 6 – Stream use Codes
- 01 – Aquatic, Fish and Wildlife Support
  - 03 – Warm water
  - 06 – Cold water
  - 08 – Shellfish protection
  - 09 – Seasonal
- 10 – Raw domestic water supply
- 20 – Agricultural
- 30 – Industrial
- 40 – Recreation
  - 42 – Full body contact
  - 44 – Partial body contact
  - 46 – Non contact
  - 49 – Seasonal
- 50 – Navigation
- 60 – Other

Item 13 – Comment Codes
- 1 – Excess I/I is cost effective to treat
- 2 – Package plant for exact required capacity is not available
- 3 – Existing plant has excess capacity now to treat 2000 population
- 4 – No sludge handling facility since sludge is pumped to another facility
- 5 – Receives flow from other municipal facility(ies)
- 6 – Flow diverted to other municipal facility(ies)
- 7 – Receives flow from other non-municipal facility(ies)
- 8 – Flow diverted to other non-municipal facility(ies)
- 9 – Serves inner city
- 0 – Additional comments on form
- A – IVA needs required by public health official

Item 16a – Facility Status
- 1 – In operation
- 2 – Not in operation

Item 16b, 16c – Nature of Facility
- 1 – A complete wastewater treatment system (includes a treatment plant, with associated collector and/or interceptor sewers, and methods for disposal of effluent, under control of the same treatment authority) with combined sewers. Code "A" for interim treatment plant.
- 2 – A complete wastewater treatment system (includes a treatment plant, with associated collector and/or interceptor sewers, and methods for disposal of effluent, under control of the same treatment authority) with separate sewers. Code "B" for interim treatment plant.
- 3 – A separate treatment plant. (The sewers which discharge to this plant are under the control of one or more different authorities.) Code "C" for interim treatment.
- 4 – A separate municipal wastewater collection system. (Includes one or more connected collector and/or interceptor sewers, force mains, pumping stations, etc., which either discharge without treatment or discharge to a facility controlled by a different authority. Do not include combined sewers or storm sewers.)
- 5 – A separate combined sewer system. (Includes one or more interconnected sewers which carry both sanitary wastewaters and storm waters, and which either discharge without treatment or to a facility operated by another authority. If facility includes both separate sanitary sewers and combined sewers, report as combined.)
- 6 – Other
- 7 – A system for the bulk transmission of wastewater with or without pumping stations, and with or without interceptor sewers.
- 8 – Sludge handling facilities, including vehicles or vehicle fleets
- 9 – Individual septic system
- 0 – Community septic system

Items 16d, 20c, and 32c – Projected Change
- 1 – Enlarge
- 2 – Upgrade
- 3 – Enlarge and upgrade
- 4 – Install in new plant
- 5 – Replace
- 6 – Abandon
- 7 – No change
- 8 – Other
- 9 – Abandon treatment plant, retain sewers

Item 17d – Basis of Estimate
- 1 – State certification
- 2 – Analysis completed
- 3 – Evaluation survey completed
- 4 – Engineer/consultant firm estimate
- 5 – Cost of previous comparable construction
- 6 – Engineer/consultant preliminary estimate (facilities plan)
- 7 – EPA – supplied cost estimating procedures
- 8 – Cost effective analysis (unapproved facilities plan)
- 9 – Other preliminary estimates
- A – Grant award fulfills all needs
- B – Grant award fulfills partial needs
- C – State-supplied cost estimating procedures

Item 17e – Reasons for Separate State Estimates
- 1 – State used locally or self-developed cost curves or cost estimating procedure
- 2 – State estimates based on larger projected per capita flow
- 3 – State disagreement with selected collection/treatment alternatives
- 4 – State estimate submitted without adequate documentation
- 5 – States estimates based on incomplete or unapproved engineering reports
- 6 – State population projections differ from allowable ceilings or reports
- 7 – Other *(Explain on reverse side of EPA-1 form in comments section)*

Item 19a – New Collectors, Interceptors, Force Mains, and Pumping Stations
- CS – Collector sewers
- IS – Interceptor sewers
- FM – Force Main
- PS – Pumping Station
- FF – Outfall sewers
- SF – Ocean outfall sewers

Item 20a – Disposal of Liquid Effluents
- 1 – Outfall to surface waters
- 2 – Ocean outfall
- 3 – Ground water recharge
- 4 – Other land disposal
- 5 – Recycling and reuse
- 6 – Septic tank field
- 7 – Other
- 8 – No discharge
- 9 – Spray irrigation
- A – Ditch irrigation
- B – To other wastewater treatment plant

Items 20b and 32b – Use codes
- 1 – Now in use
- 2 – Under construction or provided for in approved grant
- 3 – Required, but not yet approved or funded
- 4 – Not applicable
- 5 – Installed but not in use

Item 21 (I/I) and Item 23 (Major Rehab.) Corrective Action
- 1 – Not known at this time
- 2 – None
- 3 – Seal off sewer lines
- 4 – Replace/reline sewer sections
- 5 – Change/create flow routing system
- 6 – Provide flow equalization
- 7 – Other corrective actions

Item 26 – Characteristic of Effluent
- 0 – No discharge
- 1 – Raw discharge
- 2 – Primary
- 3 – Advanced primary
- 4 – Secondary

FIGURE C.2

Item 26 – Continued
- 5 – Advanced secondary
- 6 – Tertiary

Item 27 – Reason for Treatment More Stringent than Secondary
- 0 – A water quality plan which has been approved by EPA
- 1 – Order of State Court
- 2 – Order of Federal Court
- 3 – State permit or license
- 4 – NPDES permit or license
- 5 – State enforcement order or proceeding
- 6 – Federal enforcement order or proceeding
- 7 – Voluntary agreement which includes a schedule of compliance or improvements
- 8 – Other
- 9 – A certification by the State that the body of water receiving this discharge is water quality dependent, and that more stringent treatment is needed to meet Federally approved water quality standards for dissolved oxygen or nutrients

Item 28 – Supplemental Sheets
- 1 – Toxic/other codes
- 2 – Additional treatments
- 3 – Industrial Cost Exclusion

Item 30 – Codes on Supplemental Sheet

Item 32a – Treatment and Sludge Handling

LIQUID TREATMENT PROCESSES

Primary Treatment
- 01 – Pumping, raw wastewater
- 02 – Preliminary treatment – bar screen
- 03 – Preliminary treatment – grit removal
- 04 – Preliminary treatment – comminutors
- 05 – Preliminary treatment – others
- 06 – Scum removal
- 07 – Flow equalization basins
- 08 – Preaeration
- 09 – Primary sedimentation

Secondary Treatment

Trickling Filter
- 10 – Trickling filter – rock media
- 11 – Trickling filter – plastic media
- 12 – Trickling filter – redwood slats
- 13 – Trickling filter – other media

Activated Sludge
- 14 – Activated sludge – conventional
- 15 – Activated sludge – high rate
- 16 – Activated sludge – contact stabilization
- 17 – Activated sludge – extended aeration
- 18 – Pure oxygen activated sludge

Other Secondary
- 19 – Bio-Disc (rotating biological filter)
- 20 – Oxidation ditch using mechanical aerators
- 21 – Clarification using tube settlers
- 22 – Secondary clarification

AWT

Biological Treatment
- 23 – Biological nitrification – separate stage
- 24 – Biological nitrification – combined BOD and nitrification
- 25 – Biological denitrification
- 26 – Post aeration (reaeration)

Physical/Chemical Treatment
- 27 – Microstrainers – primary
- 28 – Microstrainers – secondary
- 29 – Sand filters
- 30 – Mix-media filters (sand and coal)
- 31 – Other filtrations
- 32 – Activated carbon – granular
- 33 – Activated carbon – powdered
- 34 – Two stage lime treatment of raw wastewater
- 35 – Two stage tertiary lime treatment
- 36 – Single stage lime treatment of raw wastewater
- 37 – Single stage tertiary lime treatment
- 38 – Recarbonation
- 39 – Neutralization
- 40 – Alum addition to primary
- 41 – Alum addition to secondary
- 42 – Alum addition to separate stage tertiary
- 43 – Ferri-chloride addition to primary
- 44 – Ferri-chloride addition to secondary
- 45 – Ferri-chloride addition to separate stage tertiary
- 46 – Other chemical additions
- 47 – Ion exchange
- 48 – Breakpoint chlorination
- 49 – Amonia stripping
- 50 – Dechlorination

Disinfection
- 51 – Chlorination for disinfection
- 52 – Ozonation for disinfection
- 53 – Other disinfection

Land Treatment
- 54 – Land treatment of primary effluent
- 55 – Land treatment of secondary effluent (30/30)
- 56 – Land treatment of intermediate effluent (less than secondary)

Other
- 57 – Stabilization ponds
- 58 – Aerated lagoons
- 59 – Outfall pumping
- 60 – Outfall diffuser
- 61 – Effluent to other plants
- 62 – Effluent outfall
- 63 – Other treatment
- 64 – Recalcination

SLUDGE PROCESSES

Treatment
- 65 – Aerobic digestion – air
- 66 – Aerobic digestion – oxygen
- 67 – Composting
- 68 – Anaerobic digestion
- 69 – Sludge lagoons
- 70 – Heat treatment
- 71 – Chlorine oxidation of sludge (Purifax)
- 72 – Lime stabilization
- 73 – Wet air oxidation
- 74 – Air drying
- 75 – Dewatering – mechanical – vacuum filter
- 76 – Dewatering – mechanical – centrifuge
- 77 – Dewatering – mechanical – filter press
- 78 – Dewatering – others
- 79 – Gravity thickening
- 80 – Air flotation thickening

Incineration
- 81 – Incineration – multiple hearth
- 82 – Incineration – fluidized beds
- 83 – Incineration – rotary kiln
- 84 – Incineration – others
- 85 – Pyrolysis
- 86 – Co-incineration with solid waste
- 87 – Co-pyrolysis with solid waste
- 88 – Co-incineration – others

Disposal
- 89 – Land fill
- 90 – Land spreading of liquid sludge
- 91 – Land spreading of thickened sludge
- 92 – Trenching
- 93 – Ocean dumping
- 94 – Other sludge handling
- 95 – Digest gas utilization facilities

MISCELLANEOUS
- 96 – Control/Lab./maintenance buildings
- 97 – Fully automated using digital control (computer)
- 98 – Fully automated using analog controls
- 99 – Semi automated plant
- A1 – Manually operated and controlled plant
- A2 – Package plant
- A3 – Semi-package plant
- A4 – Custom built plant
- A5 – Imhoff tanks
- A6 – Septic tanks
- A7 – Electrodialysis
- A8 – Reverse osmosis
- A9 – Pressure filters
- AA – Seepage lagoons
- AB – Rock filters
- AC – Polymer addition to liquid stream
- AD – Polymer addition to sludge stream

Item reference	Comments	Item reference	Comments

APPENDIX D

DESCRIPTION OF THE COMBINED SEWER SYSTEM WORKSHEET

The combined sewer system worksheet is supplemental to the EPA-1 form described in Appendix C for those facilities known to be served by combined sewers. Since combined sewers provide both urban drainage and wastewater conveyance, they may not always be defined on an individual facility-by-facility basis. For the purposes of the Needs Survey, a separate worksheet was completed for each combined sewer system/major receiving water configuration. Thus, a single worksheet may consider more than one combined sewer network, i.e., facility, if the networks are adjacent and discharge to the same major receiving water. A single worksheet may also consider a number of facilities which are included in a single, comprehensive CSO planning document.

The definition of a major receiving water is somewhat subjective. However, an attempt was made to define a receiving water as objectively as possible. In general, an urban receiving stream was considered to be a major receiving water if it was known to be a continuously flowing water body which could become fishable and swimmable after providing adequate control of CSO and/or other pollution sources. Streams which were wholly within a combined sewer watershed were not considered major receiving waters. On the other hand, streams draining a significant watershed area upstream from the combined sewer area were considered major receiving waters.

The 1982 combined sewer system worksheet is illustrated on Figure D.1. Listed below is a brief explanation of each item on that worksheet.

SECTION 1 - IDENTIFICATION OF COMBINED SEWER SYSTEM DATA

Section 1 of the worksheet provides identification and descriptive data on the combined sewer system. A description of each item in Section 1 is given below:

1. Authority/Facility Number. The authority/facility (A/F) number is defined in the guidance for Categories I-IV. The number reported in this item is for the major facility serving the combined sewer system. If more than one facility was involved, the additional A/F numbers are found under Item 15.

2. Authority Name. The authority name is the official name of the authority with major responsibility for operation of the combined sewer system.

3. State, County, Place. The state, county, place code is defined in the guidance for Categories I-IV. This code applies to the facility reported in Item 1.

4. SMSA Number. Those combined sewer systems located at least in part within a Standard Metropolitan Statistical Area (SMSA) as defined by the U.S. Census Bureau are reported by SMSA number in this item.

5. Basin. The basin code is defined in the guidance for Categories I-IV. This code applies to the location of the combined sewer system.

6. Congressional District. The number of the Congressional district(s) (three maximum) which are served by the combined sewer system.

7. City Name. The city name is the official name of the city or town served by the combined sewer system.

8. County Name. The county name is the official name of the county, or county equivalent, in which the major portion of the combined sewer system is located.

9. Drainage Area. The area, in acres, drained directly by the combined sewer system which is tributary to the subject receiving water.

10. Separate Sewer Area. This is the area, in acres, served by separate sanitary sewers which discharge directly into the combined sewer system. Codes for Item 10 are as follows:

    0 - No information presently available.

    1 - Some separate sanitary sewers are connected; however, the area is unknown.

    2 - Area is known and is reported.

    A code of 2 and a reported area of 0.0 means that no separate sanitary sewers discharge directly into the combined sewer system.

11. Population Served. The total number of persons resident to the area drained directly by the combined sewer system defined in Items 9 and 10.

12. Sewer Length. The total length of combined sewer, in feet, tributary to the subject receiving water.

13. Number of CSO Points. This is the number of points at which the combined wastewater/stormwater is discharged from the collection system directly into the receiving water during periods of high flow.

14. Population Equivalent. This is the dry-weather flow population equivalent for the combined sewer area defined on a BOD_5 basis and includes the resident population (Item 11), commercial contribution, existing industrial contribution, and transient population.

15. Additional Authority/Facility Number(s). Since combined sewer systems may be defined using hydrologic or previous planning considerations, data for several treatment facilities may be reported on one worksheet. This item reports all authority/facility numbers which are associated with the major facility serving a combined sewer system.

16. Local Contact. This item identifies the name, title, address, and phone number of the public works official responsible for operation of the combined sewer facility.

SECTION 2 - RECEIVING WATER CHARACTERISTICS

A single worksheet was completed for each combined sewer system/major receiving water combination. A major receiving water has been defined previously. Descriptions of each item in Section 2 follow:

17. Name of Receiving Water. The common name of the major receiving water is identified by this item.

18/19. Mean Annual Flow and 7/Q/10. The average flow rate and 7-day, 10-year low flow rate of the major receiving water are reported in cubic feet per second (cfs) by these two items. In general, this information was obtained from U.S. Geological Survey records nearest the upstream boundary of the combined sewer area. Codes for Items 18 and 19 are given as follows:

0 - Flow rate not applicable, e.g., lake.

1 - Flow rate measured at USGS gauge.

2 - Flow rate estimated from regional relationship.

20. Receiving Water Classification. The purpose of the receiving water classification is to describe the general characteristics of the receiving water. A verbal description is used to place the receiving water in one of 15 separate categories. Values and ranges of depth and/or velocity are given on the following code reference chart. Depths and velocities are mean values and apply to mean flow conditions.

Receiving water classification codes:

1 - Creeks and shallow streams [depth(d) <2 feet].

2 - Upstream feeders (2<d<5).

3 - Intermediate channels (5<d<10).

4 - Main drainage rivers (10<d<20).

5 - Large rivers (20<d<30).

6 - Impounded rivers (flow controlled or depth >30 feet).

7 - Small ponds, backwaters.

8 - Lakes.

9 - Shallow high tidal velocity estuary or bay (depth <10 feet; V ≥1.5 fps).

10 - Shallow low tidal velocity estuary or bay (depth <10 feet; $V < 1.5$ fps).

11 - Medium depth, high tidal velocity estuary or bay (depth = 10 to 30 feet; $V \geq 1.5$ fps).

12 - Medium depth, low tidal velocity estuary or bay (depth = 10 to 30 feet; $V < 1.5$ fps).

13 - Deep, high tidal velocity estuary or bay (depth >30 feet; $V \geq 1.5$ fps).

14 - Deep, low tidal velocity estuary or bay (depth > 30 feet; $V < 1.5$ fps).

15 - Open ocean or beach.

21. Known Reaeration Coefficient. If a reaeration rate for the subject receiving water has been measured, the value and the flow rate at which the measurement was made are recorded. Units of the reaeration rate are per day base e.

22. Channel Slope. This is the approximate receiving stream slope, reported in feet per mile, and in general was estimated from USGS topographic maps. This item applies only to free-flowing streams (receiving water classification 1 through 5) and is not reported if Item 21 is completed.

23. Receiving Water Background Quality. These background quality data correspond to upstream flow of the major receiving water prior to inflow from the combined sewer system. USGS water quality records may have been a source for this information. Data on the following parameters are recorded:

    Maximum mean monthly temperature in °C (generally occurs in July or August).

    Average BOD_5 concentration in mg/l.

    Average Solids concentration in mg/l.

    Average fecal coliform concentration in MPN/100 ml.

24. USGS Gauge Number. If receiving water flow estimates reported in Items 18 and 19 were derived directly from USGS flow records, the station identification number is recorded here.

25. Type of Aquatic Life. The type of aquatic life which could reasonably be supported under unpolluted or uncontaminated conditions in the receiving water downstream from the combined sewer system is recorded using codes defined as follows:

1 - Cold freshwater fishery, e.g., trout.

2 - Cold freshwater nursery or breeding area.

3 - Warm freshwater fishery, e.g., black bass.

4 - Warm freshwater nursery or breeding area.

5 - Estuary nonshellfish waters.

6 - Estuary shellfish waters.

7 - Open ocean.

26. Known CSO Problems. Water quality problems associated with the receiving water downstream from the combined sewer area which are known to be caused at least in part by combined sewer overflow are recorded using the following codes:

0 - No known problems.

1 - Aesthetic degradation.

2 - High suspended solids levels.

3 - Low dissolved oxygen levels.

4 - Bacteriological contamination.

5 - Sludge deposits.

6 - Toxic conditions.

7 - Fishkills.

8 - Eutrophication (nutrients).

9 - Other, see comments.

Up to four known CSO problems can be recorded in decreasing order of severity.

SECTION 3 - STATUS OF CSO ABATEMENT PROJECTS

A major emphasis of the 1982 Needs Survey was to identify those municipalities which had conducted CSO planning. If CSO planning was completed, the objective was to determine compliance with EPA Program Requirements Memoranda PRM 75-34 and PRM 77-4. Data on the status of CSO abatement projects were recorded in Section 3. A description of each item is given below:

27. Overall Status. The overall status of CSO abatement projects for the combined sewer system described on a given worksheet was designated using the following codes:

1 - Planning not yet begun.

2 - Ongoing 208.

3 - Draft 208.

4 - Completed 208.

5 - Ongoing 201 (Step 1).

6 - Draft 201.

7 - Completed 201.

8 - Ongoing CSO planning, non-EPA funded.

9 - Draft CSO planning, non-EPA funded.

10 - Completed CSO planning, non-EPA funded.

11 - Ongoing design (Step 2).

12 - Completed design.

13 - Construction in progress.

14 - Construction complete.

More than one code may apply to any given facility. For example, a facility may have been included in a completed 208 (Code 4) and is currently being studied by an ongoing 201 (Code 5).

28. Completion Dates. For each of the codes entered above, the actual or expected completion dates were recorded in Item 28. In the case where CSO planning has not yet begun (Code 1, Item 27), the date reported was the anticipated starting date of CSO planning.

29. Planning and PRM 75-34. To determine if current CSO facility planning was complete, comprehensive, and consistent with the requirements of PRM 75-34, the following points were considered when a Code 3, 4, 6, or 7 was entered under Item 27. If the following items were considered, a Code 1 (yes) was entered for each point. It it was not considered, a Code 2 (no) was entered. Items b, f, and g reflect criteria which are specifically required by PRM 75-34.

a. Receiving water quality objectives were defined.

b. Residual water quality problems were identified, i.e., the existence of a receiving water quality problem after achievement of the secondary treatment requirement was established.

c. Pollutant removal requirements were estimated.

d. Alternate CSO control techniques were identified.

e. A cost effective mix of CSO alternatives was considered.

f. A cost effective mix of CSO, AST, AT, and/or other control measures was considered.

g. Marginal costs were determined not to be substantially greater than marginal benefits for the proposed solution.

30. Multipurpose Projects. The objective of Item 30 was to determine if a CSO project has purposes other than pollution control, e.g., flood control or drainage. The results of Item 30 were reported for the following three points by using a Code 1 if the point was affirmative (yes) and a Code 2 if the point was negative (no).

a. Does the CSO abatement project have purposes other than pollution control, e.g., flood control or drainage?

b. Was the cost allocated to CSO pollution control determined by the alternative justifiable expenditure (AJE) method?

c. Is the cost allocated to CSO pollution control less than or equal to the least cost single purpose CSO pollution control alternative?

31. Proposed Solutions. If Codes 3, 5, 6, or 7 were entered under Item 27 and if the resulting draft or completed documents were available for review, the proposed solutions for control of CSO (five maximum) were reported using the following codes:

1. Sewer separation.
2. In-system storage with additional treatment capacity.
3. In-system storage with realtime control and additional treatment capacity.
4. Earthen basin storage with additional treatment capacity.
5. Concrete (uncovered) basin storage with additional treatment capacity.
6. Concrete (covered) basin storage with additional treatment capacity.
7. Mined storage, e.g., deep tunnels, with or without additional treatment capacity.
8. High rate treatment without storage, e.g., swirl concentrator, screening, etc.
9. In-system storage without additional treatment capacity.
10. In-system storage with realtime control and without additional treatment capacity.

11. Surface water interception/storage/diversion scheme, i.e., runoff diverted before entering a combined sewer system.

12. Sewer flushing.

13. Catch basin cleaning.

14. Streetsweeping.

15. Other, see comments.

20. Cost effective mix of CSO alternatives.

21. Cost effective mix of CSO, AST, AT, and/or other control measures.

SECTION 4 - GRANT INFORMATION

32. Grant Numbers. Grant numbers, if any, which provide Federal construction grant funds for CSO control (Category V) were entered here.

SECTION 5 - GRANT ELIGIBLE COST ESTIMATES

33. Cost Estimates. For each of the proposed CSO solutions identified in Item 31, a cost estimate was entered, when available, along with the month and year used to establish the value of money when the estimate was made.

The following codes were used for reporting cost estimates of proposed solutions:

1. Sewer separation.

2. In-system storage with additional treatment capacity.

3. In-system storage with realtime control and additional treatment capacity.

4. Earthen basin storage with additional treatment capacity.

5. Concrete (uncovered) basin storage with additional treatment capacity.

6. Concrete (covered) basin storage with additional treatment capacity.

7. Mined storage, e.g., deep tunnels, with or without additional treatment capacity.

8. High rate treatment without storage, e.g., swirl concentrator, screening, etc.

9. In-system storage without additional treatment capacity.

10. In-system storage with realtime control and without additional treatment capacity.

11. Surface water interception/storage/diversion scheme, i.e., runoff diverted before entering a combined sewer system.

12. Sewer flushing.

13. Catch basin cleaning.

14. Streetsweeping.

15. Other, see comments.

19. State supplied (separate) estimate.

20. Cost effective mix of CSO alternative.

21. Cost effective mix of CSO, AST, AT, and/or other control measures.

22. Aesthetics objective, estimated using the 1982 Needs Estimation Program (NEP82) described in Appendix B.

23. Fish and Wildlife objective, estimated using NEP82 described in Appendix B.

24. Recreation objective, estimated using NEP82 described in Appendix B.

25. Sewer separation, estimated using NEP82 described in Appendix B.

26. Needs previously met.

27. Needs reported to Congress.

FIGURE D.1

```
                                  ***************************************************          COMMENTS ON BACK:
DATA FILLED IN BY:*               *COMBINED SEWER SYSTEM DATA FILE - 1982 NEEDS SURVEY*           ****** *****
                  *               *****************************************************           *YES * *NO *
DATE:             *                                                                               ****** *****
*******************

I. IDENTIFICATION AND COMBINED SEWER SYSTEM DATA            II. RECEIVING WATER (RW) CHARACTERISTICS
----------------------------------------------------        ----------------------------------------

                                                             17.RW NAME:
 1.AUTHORITY/FACILITY NO.:                                   18.MEAN ANNUAL FLOW CODE:   FLOW:            CFS
 2.AUTHORITY NAME:                                           19.LOW FLOW:        CODE:   FLOW:            CFS
 3.STATE/CO./PLACE:     / /                                  20.RW CLASSIFICATION:
 4.SMSA NO.:                                                 21.KNOWN REAREATION RATE:
 5.BASIN:                                                      1/DAY(BASE E) FLOW:                CFS
 6.CONG.DIST:                                                22.CHANNEL SLOPE:             FT/MI
 7.CITY:                                                     23.RW QUALITY
 8.COUNTY:                                                      MAX.MONTHLY TEMP:                  (DEG) C
 9.COMBINED SEWER AREA:           ACRES                         AVE.BOD5:                          MG/L
10.SEPARATE SANITARY CODE:     AREA:             ACRES          AVE.SS:                            MG/L
11.POPULATION:                                                  AVE.FECAL COLIFORM:                MPN/100ML
12.COMBINED SEWER LENGTH:            FT                      24.USGS GAGE NO.:
13.NUMBER CSO POINTS:                                        25.AQUATIC LIFE:
14.POPULATION EQUIVALENT:                                    26.KNOWN CSO PROBLEMS:
15.OTHER A/F NO.(S):

16.LOCAL CONTACT:  NAME:
                   TITLE:
                   STREET:
                   CITY:
                   PHONE:


III. STATUS OF CSO ABATEMENT PROJECTS
-------------------------------------
27.OVERALL STATUS:                                                      30.   MULTI-PURPOSE          ** 31. PROPOSED SOLUTIONS
                                                                           A.       B.       C.      **          CODE(S)
28. COMPLETION DATES  **29.PLANNING AND PRM 75-34 REVIEW**                                           **
    CODE   MO.  YR.   **      A.  B.  C.  D.  E.  F.  G. **                                          **
                      **                                 **                                          **
                      **                                 **                                          **
                      **                                 **                                          **
                      **                                 **                                          **
                      **                                 **
                      **


IV. GRANT INFORMATION
---------------------
32.GRANT NUMBER(S):


V. GRANT ELIGIBLE COST ESTIMATES (IN THOUSANDS OF DOLLARS)
-----------------------------------------------------------
33.COST ESTIMATES                                                                                                   COST  MO. YR.
                                                                              COST  MO. YR. ** CODE
CODE      COST  MO. YR.**  CODE      COST   MO.  YR.   ** CODE                              ** 23.FISH&WILD:
                       **                              **                                   ** 24.RECREATION:
                       **                              **                                   ** 25.SEWER SEP.:
                       **                              **                                   ** 26.NEEDS MET:
                       **                              **                                   **    TO CONGRESS:
                       **                              ** 22.AESTHETICS:
                       **
```

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